lowing relationship: if A = B and B = C, then A = C. If Tom weighs the same as Jack and Jack weighs the same as Mary, then Tom and Mary are the same weight. Transitivity on the basis of difference is learned later. It refers to the inference: if A is larger than B and B is larger than C, then A is larger than C. Transitivity is one of the first steps in logical thinking and provides the basis for all forms of inference. It is essential for understanding numbers relations.

Sample goals are:

1. to demonstrate an understanding of transitivity of equivalence;
2. to demonstrate an understanding of transitivity on the basis of differences.

Sample objectives are:

1. to predict that two sticks will be the same length based on the knowledge that they are both equal in length to a third stick;
2. to predict that one person will be taller than another person based on the knowledge that the first person is taller, and the second one shorter, than a third person.

Conservation refers to the ability to recognize that an object, substance, or idea remains the same even though some characteristics of it may change. For example, a pint of water remains a pint of water when it is poured from a tall glass into a flat pan, even though the pint of water might "look different" (i.e., it has changed its shape); ten beads are ten beads whether they are pushed together in a small pile or spread out into a big pile. Yet young children do not understand this and must come to learn it. Conservation is fundamental to all of mathematics because it underlies the ability to understand the invariance of number, no matter what concrete form the number may take.

Sample goals are:

1. to conserve quantity;
2. to conserve mass;
3. to conserve number;
4. to conserve length.

Sample objectives are:

1. To recognize that the water in a glass is the same amount of water when poured into a pan, i.e., to answer the following question correctly: "Is there more water in the glass or in the pan, or is it the same amount?"

2. To recognize that a ball
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3. To recognize that ten bl
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4. To recognize that two
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Extrapolation is the abi⌐ logically from a known sequer from the pattern "1, 2, 3, 4 would bring "nation."

Sample goals are:

1. to extrapolate length;
2. to extrapolate pitch;
3. to extrapolate texture;
4. to extrapolate size.

Sample objectives are:

1. to find the next longest
   to long;
2. to sing the next highest n
   the piano;
3. to pick out the next smo⌐
   ordered from rough to sn
4. to choose the next larg
   according to size.

Interpolation is the abili⌐ ing element from the context i fit into the following series; "1

Sample goals are:

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2. To recognize that a ball of clay can be the same as a long string of clay. (The teacher would have two identical balls of clay. The child would be asked to roll one ball into a sausage shape. Then the teacher would ask, "Is there more clay in the ball or in the sausage, or do they have the same amount of clay?")

3. To recognize that ten blocks are the same number of blocks whether they are pushed together or spread out. (Using ten red blocks and ten blue blocks, the teacher would line them up in two rows with equal spacing. After the child agrees that there are the same number of blocks in both rows, the teacher would spread out one row and ask the child, "Are there the same number of red blocks as there are blue blocks, or does one row have more?")

4. To recognize that two sticks of the same length remain the same length, even if one of them is perpendicular to the other.

Extrapolation is the ability to infer the next element that follows logically from a known sequence or pattern. For example, in extrapolating from the pattern "1, 2, 3, 4," one would get "5"; "home, town, state" would bring "nation."
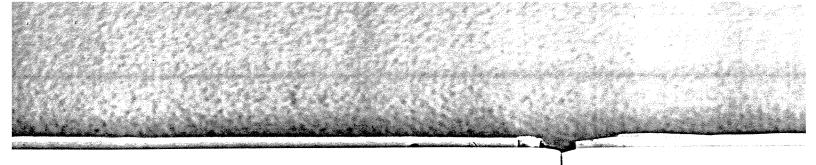Sample goals are:

1. to extrapolate length;
2. to extrapolate pitch;
3. to extrapolate texture;
4. to extrapolate size.

Sample objectives are:

1. to find the next longest stick in a series of sticks ordered from short to long;
2. to sing the next highest note (in pitch) after hearing a scale played on the piano;
3. to pick out the next smoothest piece of sandpaper in a series of pieces ordered from rough to smooth;
4. to choose the next largest ball to follow a series of balls ordered according to size.

Interpolation is the ability to infer the value or the nature of a missing element from the context in which it belongs. For example, "3" would fit into the following series; "1, 2, _, 4, 5."

Sample goals are:

1. to interpolate one item in a series ordered according to length;
2. to interpolate the words missing in a sentence;

3. to recognize a partially constructed figure by interpolating the missing lines,
4. to interpolate any missing element from any series of concrete objects.

Sample objectives are:

1. to choose the correct stick that fits into a series of five sticks, ordered according to length, with one stick missing from the middle of the series,
2. to supply the missing word in the following sentence: "For dinner, mother will ____ some bread." (Possible answers: "bake," "make," or "buy.");
3. to recognize a line drawing of a cat with some of the lines erased;
4. to place correctly the missing element into a series of cylinder blocks with one block missing.

Numbers relations is the coordination of the processes of classification, seriation, transitivity, and conservation in order to understand the concept of number. For example, it is the ability to understand that "four" represents all those things in groups of four, that it can also refer to the "fourth" element of any group, and that the number "four" does not change, no matter what the size, or how spread out the four elements of the group may be. Numbers relations also depends on the ability to understand the use of the symbols (1, 2, 3, . . .).
Sample goals are:

1. to classify objects according to number.
2. to identify the "place" of an element in a series (ordination).
3. to match correctly the name of a number with its symbolic representation and to a group of objects containing the given number of elements.
4. to seriate objects according to number and to match each element in the series with a number (one-to-one correspondence).

Sample objectives are:

1. to make groups of three buttons from a large assortment of buttons;
2. to point to the "third" stick from a series of five sticks placed in order according to length;
3. to name the number "3" printed on a card, and to put the card next to a group containing three elements;
4. to put buttons in groups of one, two, three, four, and five; then put the groups in order; and then put number cards next to the correct group.

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1. cylinder blocks—small, sc by height, diameter, or bo
2. knobless cylinders—a seri height, diameter, or both floor;
3. stacking toys;
4. nesting toys;
5. attribute blocks—blocks t
6. assorted buttons;
7. assorted small plastic toys
8. lotto game;
9. picture cards for matching
10. number cards;
11. three-dimensional number
12. colored blocks;
13. colored wooden beads;
14. design blocks with cards f
15. sand, water table, or both
16. water toys—cups, pitchers

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Cognitive competence depends on giving the child the opportunity to explore a wide range of stimuli and to manipulate concrete objects. Many of the materials used for perceptual development would also be useful for cognitive development, since interpretation—a cognitive activity—follows the recognition of stimuli. The following materials would also be helpful:

1. cylinder blocks—small, solid, cylinders that fit into holes in a series by height, diameter, or both;
2. knobless cylinders—a series of small cylinders that vary according to height, diameter, or both and that can be stacked or placed on the floor;
3. stacking toys;
4. nesting toys;
5. attribute blocks—blocks that vary in size, color, shape, and thickness;
6. assorted buttons;
7. assorted small plastic toys for classifying and counting;
8. lotto game;
9. picture cards for matching;
10. number cards;
11. three-dimensional numbers;
12. colored blocks;
13. colored wooden beads;
14. design blocks with cards for matching;
15. sand, water table, or both;
16. water toys—cups, pitchers, and so forth.

The environment should be arranged so children can use the materials alone, with a teacher, or with a few other children. If the use of a material is not clear by looking at it, the teacher should demonstrate its use or have the children show each other how to use it. Words are not always necessary; sometimes a teacher can show a child how to do something without talking about it. In fact, the young child can often concentrate better when words are not used, because they may either create too much stimulation or distract the child's attention.

Following are some basic principles to keep in mind when guiding the child's cognitive development:

1. Children learn best when they can manipulate concrete objects. Pictures, words or numbers in a book are much less interesting and more difficult to interact with. Concrete objects allow children to be active participants in their own learning. Children should be given ample time to explore the environment on their own.
2. Activities should move from simple to more complex. If an activity is too simple, make it more difficult; if it is too difficult, simplify it. Some ways to make an activity more difficult are to add more ele-

ments; blindfold the children and have them complete the activity using touch; have the children draw a picture of what they are doing; or have them show one another how to do the activity.

3. Activities should move from concrete to abstract. The child should manipulate the objects, then talk about the manipulation, draw a picture of it, or look at a picture or symbol of it.

4. Teachers should focus more on process than on product. If children classify or seriate incorrectly, we should not criticize them, but attempt to find out why they did what they did. They may have good reasons, or they may recognize the mistakes themselves.

5. Encourage children to solve problems for themselves by asking questions rather than giving them the answers all of the time.

Questions for administrators are:

1. Is there a large enough variety of materials to stimulate cognitive development?

2. Are there enough materials to accommodate the children so they do not get bored playing with the same things over and over again, but not so many that the environment looks cluttered?

3. Can the materials be used for several different purposes?

4. Do the teachers guide the children to get the most use out of each material?

5. Does each material have a purpose?

Affective Development

Affective competence refers to the organization of feelings and emotions such that the child can manage them in a healthy way. Our emotions give us information about our condition of well-being—how we are getting along in the world. It is important for children to feel good about those things that will help them grow and develop, and to feel bad about those things which will harm them or prevent him from growing and developing. It is also important that the emotions give accurate feedback. Children should not be fearful if there is nothing to fear, for example. Likewise, they should not feel good about something destructive, such as drinking alcohol or smoking cigarettes.

Thus, affective competence involves being able to evaluate our emotional state and to regulate our emotions so they conform to reality by giving an accurate assessment of our quality of life.

Evaluating emotions is our ability to think about how we are feeling and to determine whether or not the feeling is justified. It requires being able to identify the circumstances that led up to a particular emotion to decide whether or not the emotion is warranted by the circumstances.

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Guiding emotions is our ability to act on our evaluations. If the emotion is appropriate to the circumstances, it can be encouraged or allowed to remain constant. If it is inappropriate, it should be inhibited or changed to another form. Once the emotions seem to be consistent with reality, we can then make decisions about how to act. We might try to perpetuate the circumstance, or to change it, or to figure out what to do if it cannot be changed.
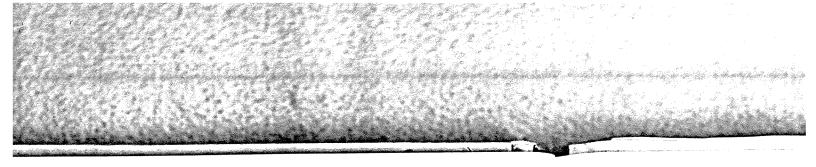
The primary goals for affective development are for children to evaluate and to guide their emotions. It would be difficult to write objectives for affective competence since emotions are difficult for another person to assess. However, some subgoals may be listed:

1. For the children to feel good about themselves.
2. For the children to feel joyful about school and learning.
3. For the children to feel contempt for injustice.

Arranging the environment and guiding the child's interaction with his or her environment are often more difficult in the affective area than in the other areas because it is difficult to assess a child's emotional status. Generally, the classroom should provide a warm and supportive atmosphere in which the child feels loved and respected. This atmosphere can be created by individualizing instruction—giving the child freedom to choose his or her own ways of learning within reasonable limits, and by providing experiences for the child within the child's range of ability. When children's developmental needs are thus taken into account they feel respected by their teachers and good about themselves because they are able to have some control over their environment and because they sense their emerging capabilities. Of course, the teacher must show genuine love for the children and treat them impartially to maintain the supportive atmosphere.

Guiding the child's interaction with his or her own emotions depends on the teacher's ability to accurately perceive emotions in relation to the circumstances, and to help the child decide on acceptable courses of action to maintain the emotion, change it, or make it possible for the child to live with it.

To accurately perceive a child's emotional state and the circumstances surrounding it may require some discussion with the child. For example, perhaps a child is afraid to play at the water table. To the teacher this may seem to be a silly fear, and the teacher may force the child to get wet. However, the child may have a reason for avoiding water that the teacher should know in order to help the child overcome the fear. The teacher will have to engage the child in a nonthreatening discussion to uncover the source of the fear. If this approach is unsuccessful, the teacher may wish to consult the child's parents. Sometimes it is enough to acknowledge the child's feelings, for example, to say,

"You're angry that you can't have the ball now." This statement lets the child know that the teacher has heard the child, but that the rules will not be changed just for the child's convenience. The child may be enabled to change the anger into constructive action.

The teacher knows now how the child feels and why, and may be able to help the child analyze the emotion and decide whether or not it is appropriate. This may be done by explaining to the child aspects of the situation that the child did not previously consider, for example, "John didn't mean to splash you; he was only trying to wash the toy." The teacher should encourage the child to talk about the situation and to make judgments about his or her reaction to it.

Sometimes children are not able to express their emotions in constructive ways. When this happens, the teacher can help by suggesting alternative actions and by reminding the child of the acceptable options available whenever the situation comes up. For example, the teacher may say, "If you are angry you can go and punch a pillow"; or, "If you are afraid to go in the swimming pool you can play at the water table instead." The teacher should encourage the child to think of alternatives by saying to the child, for example, "Is there another way you can show me you are upset?"[4]

Of course, the example of the teacher is an important component of the atmosphere of the classroom. If the teacher is nervous and irritable, the children are likely to be nervous also. If the teacher is calm and knows how to handle his or her own emotions, the children will be calm as well, and will be able to learn from the teacher a mature way of expressing emotion.

Finally, reward and punishment are powerful influencers of emotional reaction, even though the teacher may not realize he or she is using them. If we run to pick children up when they cry at the slightest little bumps, they will learn that little bumps deserve lots of attention and crying is the way to get it. If we continually give children tasks that are too difficult for them, they will learn to associate frustration and failure with learning and will avoid learning and school in the future. The teacher should be aware of situations in which reward and punishment are given inappropriately. In general, the teacher should praise more than punish, and the praise should be warranted.

Administrators might ask themselves the following questions about the affective curriculum:

1.   Do the teachers model mature emotional behavior?
2.   Do the teachers show genuine love for the children?

3.   Are there enough teach(
     least one teacher?
4.   Do the ground rules fac
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5.   Are parents consulted

Volitional Development

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2.   to attend to directions g
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3.   to listen to the words of ;
4.   to answer the question: "

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[4] Dramatic play can be a healthy vehicle for emotional outlet and for trying out new ways of managing emotions. Feelings of anger and resentment that may not be acceptable at home can be expressed in the housekeeping corner. The teacher and other children may be able to guide a child to examine his or her anger and find ways of resolving it in a make-believe situation.

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3. Are there enough teachers so that each child is known well by at least one teacher?
4. Do the ground rules facilitate the smooth functioning of the classroom and minimize conflict and frustration?
5. Are parents consulted frequently about their child's well-being?

Volitional Development

Volitional competence is the ability to intend to do something and then to actually carry it out. It involves "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" (Jordan, 1976). Volitional competence enables one to direct the course of one's learning and, in fact, to shape one's entire life. Three basic processes make up volitional competence: attention, goal setting, and will.

Attention is the ability to concentrate on one thing at a time. It is the "purposive selection (differentiation) and organization (integration) of bodily movement, sensory information, feelings, thought, and memory into a single focus of conscious experience" (Jordan, 1976). Everything we think and do depends on attention, since we can choose only certain ideas or features of the environment to attend to at one time. The ability to focus on one idea or event and block out all others is often called concentration and is necessary for learning to take place. One must learn to attend to things, to events, and to ideas.
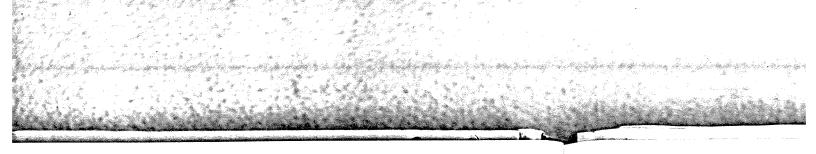
Sample goals are:

1. to attend to a simple learning experience from beginning to end;
2. to attend to words (one type of abstraction);
3. to maintain attention despite distractions;
4. to attend to the future, or to imagine a new possibility.

Sample objectives are:

1. to complete a puzzle without interruption;
2. to attend to directions given on a tape recorder despite background noises;
3. to listen to the words of a song and memorize the song;
4. to answer the question: "I wish I were . . . "

Goal setting is "planning one's future by formulating a vision of a condition or event toward which one will strive" (Conway and McCullough, 1975). It involves choosing certain possibilities, rejecting others, and deciding on a course of action to realize those possibilities. Goal setting applies to long-range and short-range goals, to important and unimportant goals. It requires the ability to break down a goal into

manageable subgoals. For example, a child may want to build a toy boat. The teacher will have to help the child break down the goal by demonstrating the steps involved in making the boat. Setting subgoals is required for many classroom projects.

Sample goals are:

1. to attend to future possibilities.
2. to choose among the future possibilities an achievable goal;
3. to set increasingly longer range goals;
4. to assess the feasibility of achieving a particular goal.

Sample objectives are:

1. To talk with an adult about something that will happen the next day.
2. To choose one of four possible activities available in the classroom. (The teacher would have to explain the possibilities to the children and then ask them to state their preferences.)
3. To choose an activity to do several hours later; to choose an activity for the next day or the next week, gradually increasing the time interval in the course of the year. (The teacher might devise a system of recording the children's choices.)
4. To tell the teacher before starting to work whether or not all of the materials necessary for a particular art project are available.

Will is the means by which one achieves a goal. Using the will includes initiating action (self-arousal), maintaining the action (perseverance) and completing the action (effecting closure). Will depends on attention and goal setting and follows naturally from them. If appropriate goals are set and attention is focused on achieving them, exercising the will is made easy.

Sample goals are:

1. to initiate the action necessary for the achievement of a goal;
2. to continue working toward a goal despite difficulties;
3. to persist toward the completion of a goal over increasingly longer periods of time;
4. to complete a goal.

Sample objectives are:

1. to begin a chosen activity;
2. to continue working on the activity even though other children or noises might be interrupting;
3. to continue working over a half-hour period;
4. to complete the activity or project.

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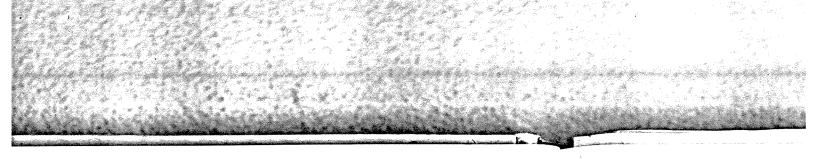ipite difficulties;
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The overall arrangement of the classroom is a crucial aspect of the development of volitional competence. Distractions are best kept to a minimum, by having ground rules that discourage children from being too noisy or interrupting each other, by keeping the classroom neat and orderly, and by decorating the room simply and tastefully. It is also a good idea to have some semi-private space where children can go off and be alone.

Materials should be displayed so they are accessible to children. If children are to set their own goals, the materials to achieve the goals should be available to them. New materials should be displayed from time to time and old ones stored away, since children are attracted to novelty and their interest will be aroused.

Volitional development will be enhanced if the teachers follow these suggestions when guiding the child's interaction with his or her environment:

1. Activities should be at an appropriate level of difficulty for each child. If an activity is too easy, the child will become bored and will not be stimulated to complete it, or the child may not even start in the first place. If it is too difficult, the child will become frustrated and unable to finish. If a child chooses an activity that is too easy or too difficult, the teacher may want to let the child try it and then discuss the choice with him or her later if there is a problem. If the teacher is presenting a material, it should be at an optimum level of difficulty for the child.
2. A child should be allowed to complete what he or she has started without interruption from the teacher or other children. A child who is constantly interrupted will become frustrated and will tend to give up the task. The teacher may want to warn children a few minutes beforehand that lunch time or closing time is coming up so they can finish up what they are doing or put it away for the next day.
3. Sometimes children should be allowed to have a choice about what they do. Having choices allows one to set goals and achieve them independently from the teacher.
4. Sometimes the teachers may ask the children to state their goals out loud so the teacher can make a record of it. The teacher should also record each child's accomplishment of the goal. In this way the children make commitments to their goals in front of others and they know they will be held accountable to achieve them. Also, the children begin to learn the importance of setting and achieving goals.
5. Children should be able to set increasingly longer term goals. At first the goal might be achieved in a few minutes; later they can work for a half hour or more. Eventually they will be able to plan

a week or so in advance to carry out an activity that may take several days to complete.

6. Children may need help in assessing the feasibility of the goals they have chosen. The teacher might ask some key questions, such as, "Do you have enough time to complete this activity?" If children continuously have difficulty achieving their goals, the teacher may want to point out some of the factors involved in their failure so they will be able to choose more wisely the next time.

7. Sometimes children need the encouragement of the teacher to help them achieve goals. Knowing that the teacher thinks they can do it and is counting on them to do it will often motivate the child to complete the project.

Questions for administrators are:

1. Is the classroom atmosphere conducive to volitional development?
2. Are children given the freedom to work independently?
3. Are the expectations of the teachers consistent with the child's ability?

CONTENT CURRICULUM

Content refers to information about the world in which we live. The content curriculum includes all the pieces of information that children should have about their world. That world is comprised of physical, human, and unknown elements. Thus, the curriculum may be divided respectively into three sections: science, human relations, and religion and philosophy. Each of these components of the content curriculum will be defined, sample goals and objectives will be provided, and suggestions for integrating it with the process curriculum will be discussed.

Science Curriculum

The science curriculum comprises information about the physical environment—the animal, vegetable, and mineral elements. Since the amount of information to be learned is so immense and since one person cannot possibly learn it all, it is a good idea to begin with the fundamental laws and principles of science that govern their activity. These laws and principles explain how the physical world operates and describe the relationships among the various elements in the physical world. Most of the laws and principles can be simplified so that young children can understand them. We are referring here to such laws and principles as the law of gravity, the laws of motion, and Archimedes' principle in physics; the principles of diffusion and osmosis in biology; and so on.

Sample goals are:

1. to learn the principles of
2. to learn the characteristic
3. to learn the characteris learning scientific observa
4. to learn Archimedes' prin

Sample objectives are:

1. to correctly predict wh two magnets are put t predictions to the teacher
2. to correctly predict wh: with and without sugar;
3. to classify the followin not they will mix with baking soda;
4. to classify the following they float: a small piece objects found in the classi

The science curriculum i outlined for cognitive comp physical world, such as leaves and classification can be use objectives 3 and 4 above. In a makes use of psychomotor, integral part of learning scie processes of observation, pr (drawing conclusions). When of science, they should be gi scientific method. This way, th of science at the same time.

When doing science expe child can play an active rol group of children and give ea give a demonstration to a lar the experiment separately with materials with one or two oth explanatory, they might be lef center for the children to use ask the children the following scientific method.

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Sample goals are:

1. to learn the principles of magnetism;
2. to learn the characteristics of yeast (principles of chemical reactions);
3. to learn the characteristics of a soluble substance (as a step in learning scientific observation);
4. to learn Archimedes' principle.

Sample objectives are:

1. to correctly predict what will happen when the north poles of two magnets are put together (children should first state their predictions to the teacher and then try them out);
2. to correctly predict what will happen when yeast is put in water with and without sugar;
3. to classify the following substances on the basis of whether or not they will mix with water: sand, sugar, oil, salt, stones, and baking soda;
4. to classify the following objects on the basis of whether or not they float: a small piece of wood, a cork, a nail, and other small objects found in the classroom.

The science curriculum is intimately connected with the processes outlined for cognitive competence. For example, elements from the physical world, such as leaves, can be used for a classification exercise, and classification can be used to illustrate scientific principles, as in objectives 3 and 4 above. In addition, the scientific method itself—which makes use of psychomotor, perceptual, and cognitive processes—is an integral part of learning science. The scientific method includes the processes of observation, prediction, experimentation, and inference (drawing conclusions). When children are taught the laws and principles of science, they should be given opportunities to use the steps of the scientific method. This way, they can learn both the theory and practice of science at the same time.

When doing science experiments with children, it is best if each child can play an active role. The teacher might work with a small group of children and give each one a task to do. Or the teacher might give a demonstration to a large group and then ask each child to do the experiment separately with his or her own materials, or by sharing materials with one or two other children. Also, if the materials are self-explanatory, they might be left out on a table or shelf to form an activity center for the children to use whenever they are ready. Teachers might ask the children the following questions to encourage them to use the scientific method.

Observation: "What do you see? Tell me about it. What else do you see?"

Prediction:	"What do you think will happen?"
Experimentation:	"What could we try next? How will we know if we are right?"
Inference:	"What happened? Why? Could there be any other explanation?"

These questions will help focus the children's attention on the method of science while they are learning the laws and principles of science at the same time.

Human Relations Curriculum

The human relations curriculum is comprised of information about human beings and how they function, as individuals, in small groups, and in large groups. It includes the principles of both individual development and group interaction, as well as information about particular cultures and how they function. The human relations curriculum for young children would be most likely to include a study of the various roles people play in society, for example, doctor, firefighter, mother, or father; a study of people from other countries; and study of the individual backgrounds of the children in the class.

Sample goals are:

1. to learn about the people who serve the community—what they do and why;
2. to learn about the people who live in other countries;
3. to learn about the families of the other children in the class;
4. to learn that men and women are equal.

Sample objectives for human relations are:

1. to explain what police officers are and what they do;
2. to explain three things about South Africa and the people who live there;
3. to name the brothers and sisters of three other children in the class;
4. to draw a picture of men and women occupying roles other than traditional roles (for example, a man washing dishes or a woman laying bricks).

The human relations curriculum involves all of the processes—psychomotor, perceptual, cognitive, affective, and volitional. It is important that children be given opportunities to exercise these processes through active participation in learning about human beings and by studying issues relevant to them (such as having a new baby in the house). Involving the children actively might take the form of taking field trips

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Religion and Philosophy Curricu

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Sample goals are:

1. to speculate about creation
2. to express one's relationship

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to parts of the community (such as fire station, farm, or factory, etc.); inviting people into the classroom (such as mother and baby, people from other countries, dentists, or artists); or doing things in the classroom, such as making food from another country, that will give the children a firsthand experience with the way other people live and work.

At the same time, principles of human interaction can be introduced. For example, when talking about people from other cultures, we can explain that even though people may do things differently, it does not mean that one way is right and one way is wrong. All cultures should be respected. When talking about families, we can discuss among other things the equality of men and women and the importance of respecting family members. Probably the most fundamental principles to be emphasized are the equality and dignity of human life (all races, religions, nationalities, and sexes), and the Golden Rule as the way of interacting with others that best guarantees protection and respect for all.

In teaching human relations it is easy for our own biases about other cultures or certain professions to come out. The best way to guard against transmitting these biases to children is to emphasize principles rather than specific facts about other people, and to bring out the similarities rather than the differences. It is important for the teacher to show by example respect for all people and for all the children in the class if the children are to internalize the principles of human relations.

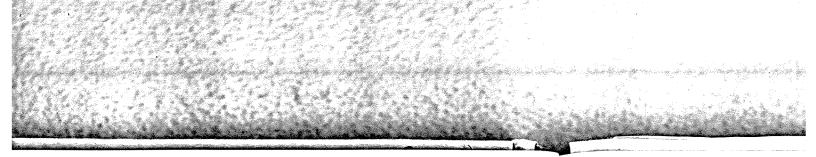### Religion and Philosophy Curriculum

The unknown environment refers to all those things that are unknown to us—facts yet to be learned, such as the forces governing the universe. Religion and philosophy are traditionally the means by which people deal with the unknown. Religion is used here in a nonsectarian sense to refer to an approach to the unknown based on faith. One makes hypotheses about the nature of the unknown and then acts on the basis of those hypotheses. For example, people who believe there is an afterlife might act differently than people who do not. People who believe that humans are naturally good will treat children differently than people who believe humans are naturally evil.

Young children may not be able to ponder these ultimate questions, but they can learn a little bit about the world's religions and what various people mean when they talk about God. They can be exposed to the arts—music, poetry, dance, visual arts, and so on—to become familiar with the ways in which people have tried to express the unknown or a relationship with the unknown.

Sample goals are:

1. to speculate about creation and how it came about;
2. to express one's relationship to the unknown using the arts;

3. to become familiar with some of the ways other people have expressed a relationship to the unknown;
4. to know what religion is.

Sample objectives:

1. to tell the teacher how the world was created in his or her own words;
2. to write a poem by completing the following sentence: "I wish . . .";
3. to view a ballet;
4. to name three of the world's religions.

The processes most intimately connected with the religion and philosophy curriculum are the cognitive and volitional processes. To contemplate the unknown we must be capable of abstract thought. To deal with the unknown, we must be able to focus attention, set goals and act on the basis of assumptions. Gradually, as we do this, the unknown becomes known. One way to help children focus attention on the unknown is to explain to them the objectives of the school curriculum, so they know what they don't know, and know what they will learn.

One of the unknowns that each individual has to deal with is his or her ultimate purpose. While an understanding of ultimate purpose is a personal matter, teachers can help children begin to think about their purpose and to use it as the ultimate criterion for decision making. This is done most effectively when teachers have thought about their own purpose and the purpose of life in general. This will give them a basis for the decisions they make in the classroom and will give the children a feeling of stability and coherence, because everything in the classroom will be working toward the same end. Teachers should point out to the children the purpose behind their decisions (activities, rules, room arrangement, and so on), so the children can begin to make the connection between the purpose and the outcome, and understand the importance of basing decisions on purpose.

SYMBOL SYSTEMS

Human beings are uniquely capable of understanding and using symbols. This capability is the basis of consciousness and enables us to think about and pursue future possibilities. Through the use of three basic symbol systems—mathematics, language, and art—human beings mediate their interaction with the environment. The symbol systems serve as the primary transmitters of culture from one generation to the next.

The symbol systems have both process and content components that must be taken into account when teaching the systems. Each symbol

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Mathematics

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Sample goals are:

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3. to identify correctly a nun
4. to put two equal groups
with each other.

Sample objectives are:

1. to say the name *four* to
on the table;
2. to count a series of sticks
3. to name the number *thre*
on it;
4. from a group of ten wh
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system will be defined, and its process and content components will
be identified. Sample goals and objectives will be provided, and the
role of the teacher with respect to the symbol system will be discussed.

Mathematics

Mathematics is the symbol system that is used to represent measurable
relationships or quantity. The processes involved in mathematics are
primarily cognitive processes, including classification, seriation, tran-
sitivity, conservation, and numbers relations. The content required for
understanding mathematics includes knowing the names of the numbers
and their order; knowing what addition is, and subtraction, and so on;
knowing the names of the geometrical figures; and so forth.

Sample goals are:

1. to know the names of the numbers and to match the names with
    the quantities they represent (content and process);
2. to know the order of the numbers and to match them with a series
    of ordered objects (content and process);
3. to identify correctly a number with its visual representation (content);
4. to put two equal groups of objects into one-to-one correspondence
    with each other.

Sample objectives are:

1. to say the name *four* to a group of four objects the teacher puts
    on the table;
2. to count a series of sticks that have been laid out in order by length;
3. to name the number *three* when viewing a card with "3" written
    on it;
4. from a group of ten white buttons and ten red buttons, to put
    one red button with each white one, forming ten pairs of two but-
    tons each.

The arrangement of the environment for mathematics is similar
to that for cognitive competence. In addition to the materials already
suggested, teachers could include three-dimensional numbers, sandpaper
numbers, numbers printed on cards, Cuisenaire rods (or similar counting
rods), geometric shapes, and geo-boards. Activities for various develop-
mental levels should be provided and plenty of paper and pencil should
be on hand so children can record their work.
In teaching mathematics, it is important to move from the concrete
to the symbolic and from simple to complex, taking the child step-by-
step, until the child understands completely the numerical symbols

without reference to concrete objects. The child will count out many groups of concrete objects before putting a label to them. When the child does begin to label them, he or she can do so with a three-dimensional representation of the number or a number card. The same principle applies to addition. The child learns to add two and two by taking two objects, such as buttons, and putting them together with two other buttons. At this point the child can draw a picture of what he or she has done as one way of representing the work symbolically. Later, numbers can be added by placing number cards next to the objects (and drawing a picture of them). Eventually, the child will be able to use the numerical symbols only and write them on paper with no objects necessary. It is important to go back to the concrete objects, however, when teaching a new operation, such as subtraction or place value, to make sure children have a clear grasp of the concept.

Of course, mathematics can be integrated with all aspects of the curriculum. Anything the child is working on can be counted and recorded—the wheels on a car, the blocks, the children in the room (or in a particular area), the bookshelves, and so on. Opportunities for matching (one-to-one correspondence) also occur frequently—the worker with the worker's place of work (fire fighter with fire station), a mother animal with her baby, and so on.

The types of activities appropriate for children age 3 to 5 are classification and seriation exercises, counting, learning the numbers, grouping objects by number, and matching numerals with groups of objects. Most preschool activities—such as sand play, water play, manipulative activities—give children experience with size, quantity, and spatial relations.

The teacher will want to have some type of recording system to keep track of each child's developmental level and progress in mathematics. With this information the teacher will be able to direct the child to experiences appropriate for him (see the discussion on record keeping in the section "Guidelines for Developing Experiences for Young Children," later in the chapter).

Language

Language refers to the use of speech sounds as symbols to communicate ideas and information. It may have a graphic representation (writing), which can be decoded to speech and meaning (reading). Language is the primary method of communication used by human beings and the chief vehicle for memory. Without language the ability to learn would be seriously impaired.

Although language is learned without any instruction, there are ways of interacting with children to enhance their ability to speak and to understand language. The goals and objectives for language will center

around enhancing language a hand, must be taught. Thus, writing will focus on the proc and writing.

Language, including rea all five categories—psychom(volitional. Psychomotor proc(lips, and vocal chords to mal or pencil for writing; and m reading. The perceptual pro(for language comprehension. association—the ability to a sound, or sight with meanin and inference, that allow on primary affective process is toward language and readin; can be made toward learnin; as well. The volitional proc(to certain features of letters to make sense from the words.

The content for spoken must know that sounds can r the content includes knowin; and meaning, knowing what l(the names of the letters, and s(

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1.   to use spoken language t(
2.   to use spoken language t(
3.   to acquire beginning writ
4.   to recognize letters.

Sample objectives for lan;

1.   to tell the teacher wha language he or she can un
2.   to say "please" when req
3.   to make straight lines an and paper;
4.   from a group of three-(whose name the teacher (

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around enhancing language ability. Reading and writing, on the other
hand, must be taught. Thus, the goals and objectives for reading and
writing will focus on the process and content aspects of beginning reading
and writing.

Language, including reading and writing, involves processes from
all five categories—psychomotor, perceptual, cognitive, affective and
volitional. Psychomotor processes include the movement of the tongue,
lips, and vocal chords to make speech sounds; manipulation of the pen
or pencil for writing; and movement of the eyes (visual tracking) for
reading. The perceptual processes are vision for reading and hearing
for language comprehension. Cognitive processes include matching, or
association—the ability to associate sound with meaning, sight with
sound, or sight with meaning—plus all the processes, such as analogy
and inference, that allow one to comprehend complex meanings. The
primary affective process is the acquisition of a positive disposition
toward language and reading. Without this disposition, little progress
can be made toward learning to read, which will affect later learning
as well. The volitional process involved is the ability to pay attention
to certain features of letters and words and to ignore others in order
to make sense from the words.

The content for spoken language is minimal, except that the child
must know that sounds can represent meaning. For reading and writing,
the content includes knowing that written symbols can represent sound
and meaning, knowing what letters are, knowing what words are, knowing
the names of the letters, and so on.

Sample goals for language are:

1. to use spoken language to communicate needs to the teacher;
2. to use spoken language to communicate courtesy;
3. to acquire beginning writing skills;
4. to recognize letters.

Sample objectives for language are:

1. to tell the teacher what activity he or she wants to work on in
    language he or she can understand;
2. to say "please" when requesting something from someone;
3. to make straight lines and circles from a sample copy using a pencil
    and paper;
4. from a group of three-dimensional letters, to point to the letter
    whose name the teacher calls out.

In the early years (birth to three years old) language is learned by
listening to language models (adults and older children). It is important
for parents and teachers to speak to infants and toddlers in clear language,

even though the child may not be able to respond in ways adults can understand. The adult can respond to the child, however, by leaving space in the "conversation" for the child to make sounds and by imitating the child's sounds. As the child begins to use the language, it is important for adults to speak clearly and distinctly so the child can recognize the critical features of the words. Teachers also may want to use songs, poems, and finger plays to focus on language development in an enjoyable way.

Every home and every classroom environment should include books and the reading of stories so children understand their importance and learn to love reading. Some books will be primarily for the teacher to read to the children; others will be for the children to read themselves—those with simple words and many pictures, or those with no words at all, just pictures that tell a story. Children especially enjoy looking at those books that their teachers have read to them many times.

Creative dramatics and creative writing engage children in experiences with language in natural and exciting ways. Besides the housekeeping corner in which children create their own make-believe situations, the teacher can devise some problems for dramatic improvisation: for example, "Pretend you are brushing your teeth (or pumping gas or buying groceries)"; or, "Give me directions for playing a record (or making a cake, or shining my shoes)."

Creative writing can be done through either dictation or invented spelling. In dictation, children tell stories or make up poems as the teacher (or helper) writes them down. In inventing spelling, children write down their own stories or poems using the best spelling they can, and the teacher later rewrites or types them in conventional spelling. After seeing their own work correctly spelled, children eventually learn to spell, to read, and to write by using their own stories. Furthermore, they learn that writing is a natural part of their lives and an enjoyable way to communicate ideas (Paul, 1976).

Other pre-reading activities will include letter recognition and sound-letter correspondence games. Three-dimensional letters, letters printed on cards, and pictures of various objects, animals, and so forth, will be useful for these activities. Children can become familiar with the letters by seeing them in printed form (e.g., printed on large cards) and by manipulating three-dimensional letters and putting them in a mold that fits them. Eventually the teacher can introduce the names of the letters and the alphabet. Once children know the names of the letters, they can begin to associate sounds with letters or combinations of letters. This can be done with oral games or with letter cards and pictures. (See the References at the end of the chapter for books on language development and reading.)

Pre-writing activities include tracing and copying shapes. Metal insets can be used for this. Also, designs—such as straight lines, wavy

lines, and circles—can be dra teacher and covered with clea can trace over these lines and copy the designs onto their the letters in this way, with they are using the correct strol

Of course, language sho riculum. New vocabulary in explained. Once children hav can write out new vocabulary dren can teach each other n given frequent opportunities have done or learned.

Art

Art is the symbol system tl the unknown. Through art is a way of expressing the un music, dance, theater, paintin

The arts involve proces ceptual, cognitive, affective, the psychomotor processes t tion of a work of art (paint other art forms), the percep to the world around him or the individual how he or she the unknown world. The co various artistic media and the of the history of art and the a

Young children can eng They can be introduced to a techniques for using them. C feelings and their ideas of the enough to give them a star child to express his or her is important not to teach too on getting the glue in the rig about using the right color or

Sample goals are:

1. to participate in a drama
2. to express a feeling in a v
3. to learn to appreciate mu
4. to integrate one form of