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ABSTRACT

The three papers included in this symposium discuss the relevance of Jean Piaget's theory of cognitive development to the early childhood practitioner. First, an overview of Piaget's theory is presented. This focusses on the particular aspects of the theory most relevant to practitioners in early childhood education. Second, curriculum implementation is examined. Piaget's ideas are applied to the traditional child-centered curriculum through a discussion of six steps which guide what the teacher does with children during the day: (1) anticipation, (2) analysis, (3) arrangement, (4) attention, (5) articulation, and (6) assessment of activities. Third, Piaget's contributions to understanding children's socioemotional development are examined. Ways to determine appropriate goals for socioemotional development and the means for reaching these goals are discussed. (Author/RH)

Where to Look for the Child in Early Childhood Education: Some Help from Piaget [1]

How Theory Helps in the Early Childhood Classroom

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Traditional Activities: A New Approach from a Developmental Perspective

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What Does Piaget Have to Say About Children's Social-Emotional Development?

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[1] A symposium presented at the Annual Conference of The National Association for the Education of Young Children, New York, August, 1978.

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Some Help from Piaget

The three papers included in this symposium discuss the relevance of Jean Piaget's theory of cognitive development to the early childhood practitioner. First, an overview of Piaget's theory is presented. This focusses on the particular aspects of the theory most relevent to practitioners in early childhood education. Second curriculum implementation is examined. Piaget's ideas are applied to the traditional child centered curriculum via a six step plan including the teacher's; 1) anticipation, 2) analysis, 3) arrangement,, 4) attention, 5) articulation, and 6) assessment of activities is described. Third, Piaget's contributions to understanding children's socio-emotional development are examined. Determining appropriate goals for socio-emotional development and means for reaching these goals are discussed.

How Theory Helps in the Early Childhood Classroom

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Philosophy and psychological theory seem far removed from the concerns of early childhood practitioners. Yet, in recent years an increasing amount of attention has been devoted to psychological theory and its implications for curriculum, particularly in the preschool (c.f. Peters, 1977; Seaver & Cartwright, 1977). Explored in this paper will be the implications of one theory, that of Jean Piaget, for early childhood practitioners. While particular curriculum models have been developed by others (c.f. Weikart, 1971; Kamii & DeVries, 1977), the purpose of this paper is a presentation of the theoretical constructs which are both relevant to teachers in their daily transactions with children and applicable across a variety of specific programs. This will be carried out in two steps. Firstly, the philosophical assumptions of Piaget's approach will be outlined. Secondly, a more specific discussion of the theory will be pursued. Ultimately, it is hoped that teachers and other practitioners will see that philosophy and theory are indeed intimately related to daily functioning in the classroom with young children and their parents.

Philosophical Assumptions

A discussion of the philosophical framework underlying Piaget's theory is critical for two reasons. First, it is important for all teachers to clarify the philosophical stance they assume for viewing the world (Seaver & Cartwright, 1977). Teachers are decision makers, planners, and problem solvers (Clark & Yinger, 1977). The rules employed for making these decisions are intimately related to one's view of the world and how the individual functions in that world. To be an effective decision maker, consistent rules are critical. An articulation of one's philosophical view of the individual and education will facilitate the

recognition of possible inconsistencies and hence clarify rules for making decisions. The teacher needs to identify a framework for interacting with children and their parents which is comfortable for the teacher and effective for promoting desired educational outcomes.

The second reason for discussing the assumptions of Piaget's theory are more specific to Piaget's work. Given the need of all early education practitioners to clarify their underlying world views, Piaget's approach has some special appeal. Specifically, the underlying assumptions of Piaget's parallel those of the traditional child centered nursery school approach. The traditional child centered approach to education is the most commonly implemented approach in the field today.

Listed below are the major assumptions underlying both Piaget's theory of intellectual development and Dewey's approach to a child centered curriculum. In considering these points, the reader is encouraged to compare and contrast them with his or her personal views of the individual's transactions with the people and objects in the environment. (For an elaboration of these points see Flavell, 1963; Dewey, 1962.)

1. The impetus for growth, development, and learning is within the individual. The biological nature of the child is inherently active. This is in contrast to a view that forces outside the person pressure the individual into development and learning.
2. The chance to explore novel situations is inherently satisfying and motivating. Curiosity is a natural characteristic; it does not need to be learned.

3. Children and adults learn through activity. Learning through manipulation and active exploration of objects in the world is vital to development. It cannot be replaced by learning through verbal explanation or modelling.

4. Learning and development are the result of an interaction between the biological characteristics of the child and the social and physical world in which the child lives. This means that development is more than the natural unfolding of the biological organism. Development is also more than the sum total the environmental stimuli imposed upon the child. The natural unfolding is influenced by the environment while the environmental input is influenced by the biological characteristics of the child.

5. Each child has unique needs and interests in the coghitive, social, and affective realms. The same situation in the environment may be experienced differently by different children. This means that for a learning experience to be optimal, it should be structured to suit the needs of the individual child.

6. All aspects of development; intellecutal, socio-emotional, physical, etc., are related. While each of these aspects can be considered seperately, it must be remembered that all function together in the child. No aspect of development occurs independently of the others.

These six points provide a philosophical framework for viewing the developing individual within the context of any life situation. It is expected that these viewpoints coincide with the belief system possessed by many practitioners in early childhood education. Typically, the guidelines for educational programming decisions within the traditional child centered approach stop here. However, couched within this philosophical framework is Piaget's theory of intellectual development. Piaget's theory ultimately leads to a more precise specification of teacher activities in the classroom. These will be examined later. First, the general nature of Piaget's theory will be discussed.

Piaget's Theory of Intellectual Development

Piaget is primarily interested in the intellectual or cognitive development of the child. However, all domains of functioning play a role in his theory (Piaget & Inhelder, 1969). His approach is based on the notion of a child inherently motivated to explore the environment, learning and developing through this activity. Emphasized are the interactions between internal biological factors such as maturation and external environmental factors including experiences with both the physical and social world. Learning and development result from the interaction of these factors (Inhelder, Sinclair, & Bovet, 1974).

An overview of Piaget's theory will be presented here. First, will be considered the descriptive aspects of the theory. For teachers, the descriptive aspect is primarily related to the issue of readiness. Second, will be considered the explanatory aspects of the theory. This second aspect is more directly related to the optimal manner for structuring transactions in the classroom.

Descriptive aspects of the theory.

Between infancy and adulthood children experience or pass through four stages of cognitve development (Piaget & Inhelder, 1969). Each stage might be considered a sort of rule system, actively constructed by the child through the process of interacting with the environment. The rule system for each stage is unique, though common across individuals at that stage, and is employed by the child for intellectually organizing experiences in the physical and social world. The four stages occur in an invariant sequence although the rate at which individuals pass through each stage varies.

Sensori-motor knowledge. The first stage is called the sensori-motor period. This is the simplest and most basic system the child creates for knowing about the world. The environment is organized by the child's overt actions and movements in the world. The child can move around and recognized familiar objects and people. However, the child does not truly think since he or she cannot represent or mentally reconstruct objects and people whien they are no longer present.

Pre-operational knowledge. The second stage of development is the pre-operational period. This begins when the child is approximately two years old. Now the child is first able to symbolize or represent objects, people or experiences from the past. At this time the child is first capable of internalized thought. However, this thought system is quite different from that used by older children and adults since thought lacks stability and regularity. The child focuses or "centers" attention on a particular aspect or dimension of a situation and cannot integrate that dimension with others.

For example, in social situations the child is unable to realize that other people have needs and desires different from his or her own. Speech and communication is "egocentric" failing to account for the different needs of the listener.

With respect to the physical world, the child in the pre-operational stage is unable to see how a change in one dimension is compensated by a change in another dimension. For example, the young child believes that the quantity of liquid changes as the liquid is poured from a short wide glass into a tall thin glass. The child focuses or centers on the height of the liquid in the container and doesn't see that the change in height which occurs as the liquid is poured from one glass to another is compensated by a change in width. Similarly, in classifying and organizing events, objects, and people in the environment, the pre-operational child focuses or centers on a single attribute or characteristic and cannot easily switch to a different classification scheme.

Concrete operational knowledge. At about six years of age the child constructs the third type of rule system. This is the period of concrete operations. Thought now becomes organized and flexible as the child decenters and integrates more than one dimension of a situation. Thought is stable and less easily distorted than during the pre-operational period. The rule system constructed by the child permits the application of many logical relationships missing during the earlier stages. The child is able to seriate and classify objects, to understand spatial and temporal concepts, as well as basic number concepts. The child can represent changes and transformations of objects in thought and

in drawing. Moral reasoning focuses on intentions rather than outcomes while logical reasoning becomes inductive rather than transductive.

Formal operational knowledge. The final stage of cognitive development occurs in adolescence and is known as formal operations. During adolescence the logical operations or rule systems of concrete operations are extended further. The child can now think abstractly in a truly scientific way. The child can hypothesize multiple outcomes and imagine situations other than immediate reality.

Piaget has extensively studied the nature of the developing thought system from infancy through adolescence. He has provided highly specific descriptions of concept development both within and across stages. At least a passing familiarity with all four stages of intellectual development is useful to the early childhood educator since it provides knowledge of both the beginning and the endpoints of optimal development. However, clearly of greatest interest to early childhood educators are the periods of pre-operational and concrete operational thought.

This general description of the child's developing thought system is necesary for understanding how the world appears to the young child and what the child is intellectually capable of doing. This is the first use of Piaget's theory to early childhood practitioners. However, this description fails to provide information about how the child actually learns and develops. Such an explanation of the processes of learning and knowledge development is the second use of Piaget's theory for practitioners.

Explanation: How learning and development occur.

Piaget and Inhelder have distinguished different kinds of knowledge acquired and constructed by the child. A different process of learning is associated with each type of knowledge. An understanding of the distinction between these different types of knowledge and their associated learning processes is critical for the teacher in structuring learning experiences in the classroom.

Three kinds of knowledge are described by Piaget. These include social knowledge, physical knowledge, and logical-mathematical knowledge. Each is distinguished by the type of relevant feedback to be provided by the environment. Specifically, there are some things we can and must directly teach children. There are other things children can immediately discover for themselves. Finally, there are things which can only be discovered very slowly through interaction between the environment and the learner gradually over time. Additionally, no learning is adequately explained by the simple internalization of language. Table 1 summarizes the important relationships between each type of knowledge and environmental feedback. It is important to realize that these types of knowledge are not specific to the particular stages of cognitive development described earlier. Rather, they cut across stages.

Social knowledge. The first type of knowledge is called social knowledge. Social knowledge is knowledge unique to society and the culture. Much of what we teach young children in early education programs is largely this kind of knowledge. Learning color names is a good example. A child learns to discriminate the color red from other colors. However, learning to attach the English label, red, rather than the Spanish label, rojo, or the French label, rouge, can only come from feedback or information provided by other people in the

Table 1.

Four Kinds of Knowing and How They Develop

Type of Knowledge	Where does the child get feedback from?	Examples of Activities	Typical Questions	What is learned?
Logical-Mathematical	From child's own schemata or cognitive structures, or his or her internal world.	Classification . . . . Seriation . . . . . . Number concept. . . . . Spatial Temporal	How are these different? Alike? Which is the biggest? The smallest? Are there more in one? Which has more? Less? What happened first?	Development of thought processes and organizing rule systems to efficiently and effectively cope with the world.
Physical	From the external physical world.	Balance scales . . . Baking cookies. . . . . Musical Instruments.	What will happen to the scale if you add this? How can you make this dough a little softer? What can you do with this drum to make a loud noise?	1. Properties of objects. 2. Regularities and consistencies of physical world.
Social	From people or society.	Activities with: Color . . . . . . Shape . . . . . . Numbers . . . . . . Letters	Can you find the red. . . What is this called? Can you find the five?	1. Arbitrary names for objects and symbols 2. Arbitrary social rules
Representational		- Symbolic, sociodramatic, play - Drawing & graphic representation - Telling stories, recounting experiences - Mental imagery - Immitation		To structure the world and symbolize it in more concise ways.

[1] The reader is urges to consider Kamii & DeVries (1977) for further elaboration of these ideas.

child's environment.

Some types of knowledge about letters and numbers are also social knowledge. Recognizing the fiveness of the five fingers on one's hand does not depend on feedback from other people. However, attaching the symbol "5", an arabic numeral, rather than the Roman numeral "V" is quite dependent upon social feedback.

Arbitrary rules dictated by our culture are another example of social knowledge. While rules are useful and neccesary for the functioning of society, they can only be learned by direct information provided by other people. We say, "please" and "thank you", eat certain foods with a fork rather than fingers, stop at red lights, and talk quietly in libraries because these are accepted societal customs. Such arbitrary rules are, ofcourse, to be distinguished from moral issues (c.f. Kamii & DeVries, 1977).

Physical knowledge. Social knowledge is distinctly different from the second major type of knowledge, physical knowledge. Physical knowledge is discovered by the child through direct exploration and interaction with materials in the physical world. Physical knowledge always involves some sort of exploratory behavior or action, applied to an object in the environment and an observation of the outcome of this exploratory activity.

Frequently, exploration of the physical world is associated with science activities. However, it is important to remember that physical knowledge extends across all types of experiences the child encounters in the physical environment. Physical knowledge is constructed when the child discovers the differences between dropping a wooden block and dropping a piece of paper. Physical knowledge is also discovered when the child explores and compares the results

of drawing with a white crayon on red paper to drawing with a white crayon on white paper. Such knowledge is also constructed in cooking activities when the child discovers what happens to a mixture by adding water. Physical knowledge can be immediately discovered through action upon objects.

Logical-mathematical knowledge. Logical-mathematical knowledge is the third type of knowledge identified by Piaget. Logical mathematical knowledge is constructed by the child through a gradual process of interaction with people and objects in the environment. The development of logical mathematical knowledge is seen as the child organizes the people, objects, and events in his or her world into increasingly complex logical, spatial, and temporal relationships. Specifically, the child classifies according to more than one criterion, seriates along a single dimension, and conserves attributes across spatial transformations.

Logical mathematical knowledge has profound implications for the child's organization of the world, Indeed, it is different levels of logical mathematical knowledge which distinguish one stage of thought from another. Yet, logical mathematical knowledge cannot be directly taught by other people, nor can it be immediately discovered through actions on physical objects. The construction of logical mathematical knowledge by the child proceeds slowly and gradually. It is the result of an interaction between experiences encountered in the world and internal biological conditions. The feedback for this knowledge comes from within the child. This means that the teacher has relatively little direct control over the development of logical mathematical knowledge. Piaget maintains that feedback provided by the teacher at inappropriate times may even impede the development and construction of logical thought by confusing the child.

Representation. Finally, some comment about the role of language in the development of thought and learning within Piaget's theory is neccesary. The ability to represent things not immediately present is an important human accomplishment. Language is one form of representation and some psychologists equate this form of representation with thought. According to this view, poorly developed language leads to poorly developed thought. Piaget's view of the relationship between representational processes, such as language, with thinking is in distinct opposition to this. Piaget sees language as only one form of representation. Other forms of representation include symbolic play, immitation, graphic representation, and mental imagery. All of these are important for helping the child reconstruct and understand past experiences. However, all forms of representation reflect the underlying thought system of the child. Language and other representational activities are the result, rather than the cause, of thinking abilities in the young child. Hence, training in language does not neccesarily lead to development of thought processes, although such training may support already existing abilities.

Conclusion

An effort has been made here to illustrate the relevance of philosophy and psychological theory to the daily needs and concerns of early childhood practitioners. Specifically, the relevance of the cognitive developmental theory of Jean Piaget has been discussed. The general importance for the early childhood practitioner of clarifying and articulating philosophical frameworks was discussed. The congruence between the philosophical assumptions of Piaget's approach and the traditional child centered approach suggests the relevance of

Piaget's work to many teachers of young children. It was shown that Piaget's theory suggests a system of guidelines useful for structuring learning experiences in the classroom for the teacher operating from a child centered approach. This system depends upon the teacher's understanding of the individual child's developmental status, the type of learning activity the child is involved in, and awareness of the appropriate feedback to provide for that activity.

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Traditional Activities: A New Approach from a Developmental Perspective

Part of a symposium entitled "Where to Look for the Child in Early Childhood Education: Some Help from Piaget" presented at the annual conference of the National Association of Education for Young Children, New York, August, 1978.

Theory knowledge is of little use to the early childhood educator unless it can be implemented in day to day interactions with children. For the early childhood educator the true test of Piagetian theory lies in its usefulness for deriving pedagogical principles for teaching. Whether as a teacher of toddlers, a Head Start aide, or a day care director, it is the day to day interactions that we have with children and materials that are of utmost concern. Remembering to bring in the sweet potato that started to sprout under the kitchen sink for the science table; "Robert, you were so careful when you put the needle arm on the new record"; "What do you think will happen, Monica, if we add more water to the playdough?"; pinning a field trip permission slip to each child as he departs for home -- these are but a few examples of the multiple roles we perform as teachers of young children.

According to Piaget, the child is intrinsically motivated to construct knowledge, his progressive development being influenced by maturation, social transmission, interaction with the physical environment, and the internal self-regulatory process of equilibriation. Acting upon such a theoretical premise, an environment must be designed, we deduce, that invites, allows, and encourages the having of multifold wonderful ideas. Such an environment must be rich in materials to explore, in the company of other children, under the aegis of a teacher who values spontaneous learning. As observer, listener, and question-asker such a teacher facilitates the child's construction of knowledge. These general implications seem quite an order, but just imagining clusters of children happily and earnestly engaged in self-selected tasks, with a teacher providing just the right prop or asking just the right question, we are compelled to ask for specific guidance for implementation, as opposed to these lofty while compatible sounding generalities. In other words, we are asking, "how do we do it?"

It is not incidental, as we shall see, that the traditional child-centered activities continue to be a source of delight and involvement for young children in our classrooms. Historically, teachers have retained those activities which have captured child interest, sustained involvement, and facilitated development socially, intellectually or physically. Carolyn Pratt's unit blocks are as fascinating and compelling to a four-year-old today as when they were first introduced.

As Piaget would observe, these traditional preschool activities remain popular because they call forth children to act mentally and physically. Arts and crafts, dramatic play, block building, cooking, table games, and other familiar activities seem to have stood the test of time. Again, from a Piagetian perspective, what is so compelling to children appears to be the degree to which the construction of knowledge and representation of that knowledge is provoked.

Kamii's (1977) now classic reconceptualization of the traditional child-centered curriculum within a Piagetian framework can be of tantamount importance in appreciating the continued prominence of such activities as sand and water play or cooking. For example, looking at an adaption of Kamii's chart (Table 1) and considering a hypothetical learning encounter, say baking gingerbread figures, we can see that the area of physical knowledge, the child may observe that molasses is thicker than water and pours much more slowly; in the area of social knowledge, he may learn that you call the spice that gives gingerbread its distinctive flavor, ginger; and under logico-mathematical knowledge, the child may see that the tin cutters are different and classify them spontaneously into shapes, people, and animals. In constructing his knowledge of space and time, the child may discover that only so many figures can be placed on a single cookie sheet, and that while it only took a short time to cut the figure out, it sure takes a long time for it to bake. In addition, the child may choose to represent his own mother baking by imitating her stirring motions and licking the spoon, or he may represent his own name by curling the stiff dough into his first initial.

Table 1

Child-development curriculum activities	Piaget's framework: Physical Knowledge	Social Knowledge	Logico-Mathematical Knowledge	Knowledge of Space and Time	Representation: Index	Symbol	Sign
Dramatic play							
Block building							
Arts and crafts							
Caring for plants and animals							
Cooking	X	X	X	X		X	
Singing, playing musical instruments							
Movement							
Listening to stories							
Sand and water play							
Playing with playground equipment							
Table games							
Group games							

adapted
*from C. Kamii

But now we need to go one step further beyond this appreciation of what the child may be doing and discuss the teacher's role as the facilitator of such spontaneous learning.

In a course I instructed called Developmental Planning for Young Children, I asked my college students what they hoped to learn during the quarter. One young man replied, "I hope I will know how and when to teach," - How to determine and what to do with the precious teaching moment! What I would like to recommend at this point is a six-step procedure for doing just that, for more adequately determining the teaching moment and successfully facilitating child learning. Indeed, the steps that I am suggesting have been derived from my observations of what successful Piagetian teachers do with children, and asking what enables them to be so sensitive to children, to refine their teaching skills to the degree that they truly become facilitators of spontaneous child learning.

Such teaching appears to be governed implicitly by six sequential steps guiding what the teacher does with children during the day. The six steps are:

1) anticipation
2) analysis
3) arrangement
4) attention
5) articulation
6) assessment

Anticipation is thinking ahead to what might happen in the context of a given activity, imagining the encounters likely to occur. The bases of anticipation are general observation, particular experience with individual children which yields information on child needs and interests, knowledge of child growth and development, and an understanding of Piagetian theory.

Analysis involves thinking through the areas of knowledge (social, physical; logico-mathematical) with which children potentially will be dealing, considering

specific interpersonal encounters likely to occur, as well as psychomotor skills to be used or learned; analysis also includes the deriving of specific teaching roles in terms of those specific potential child involvements.

Arrangement is actually providing the materials and creating the physical and/or social setting for a particular activity.

Attention means critically watching children in their encounters within the social and physical environment and listening in order to determine when and how to facilitate child learning.

Articulation refers to the actual teaching, the accentuation and facilitation of the child's encounters, in a particular learning moment. Here specific teaching strategies can be derived from Kamii's dichotomy of knowledge. Because the source of each area of knowledge is different, so too must the method of facilitation differ.

In the area of physical knowledge, the source of feedback are physical objects themselves. Therefore, the teacher encourages the child to act on the materials and to make predictions about the possible results of his or her own action on the materials. Asking questions that are very general at first, "What can you do with this.... what else?", and moving to the specific, "What do you think will happen if you mix the yellow and blue playdough?", "Will all of the things sink in your bucket of water?", is suggested. Accepting the child's prediction, whatever it may be, the teacher next encourages the child to act on the objects themselves, to test his prediction. "Let's see what happens when you mix the yellow and blue together." After the child has acted on the objects to test his prediction, the teacher encourages him to verbally describe the observed change with a question, such as, "How did you make the playdough green?"

In contrast, in social knowledge the source of feedback is other people, thus social knowledge must be directly taught. "Doyle is shearing the sheep.

The shears make a lot of noise but they do not hurt the sheep.... The sheep's hair is called a wool fleece; we are weaving a mat for the table with the sheep's fleece."

In the area of logico-mathematical knowledge the teacher's objective is to help the child reflect on the relationships between physical and social objects in his environment, and this she may accomplish by the juxaposition of those objects or the asking of questions. For instance, as the child places napkins and cups around the table for snack time and appears to be having difficulty deciding how many to put around, the teacher may ask, "Richie, do you have one napkin for each chair? Let's look.", and she and the child can quickly pass around the table and visually inspect for such a one-to-one correspondence.

Since children's representatives are a reflection of their present construction of reality, the teacher insures that the environment is rich with opportunities -- dramatic play, arts and crafts, and story reading which may evoke spontaneous representation at the level of the index, sign, or symbol.

Finally, assessment is looking back to what transpired, what children said and did within an activity for further clues of child interest and level of development to incorporate for future planning.

An examination of a specific behavioral vignette involving four-year old Ronnie, some of his classmates, and his preschool teacher and subsequently, the recreation of the teacher's progressive role may be useful for the illustration of the six steps just introduced.

Intent and alone in the block area sequence we can see Ronnie as he lifts a large hollow block and places it purposefully on the floor, standing it on one end. With some difficulty he attempts to place a second block on top of the first. Saving it from collapse he places a third block on top of the second.

Ronnie continues to build. Liz, the teacher, watching Ronnie's project grow, kneels beside him to ask which structure is taller and how tall he is going to build his new one. Ronnie responds by pointing to his first tower and saying his new one will be the same as the first. Ronnie completes his second tower. He stands back as a taller classmate, Robbie, places an additional block on each of his structures. Intent, Ronnie begins to build a third structure.

Meanwhile, a dramatic play scene is unfolding in an adjacent area of the room where Amy, Randy, Ann, and Robbie play fireman -- building a house, fence, and fire station. Amy calls to see if the firemen are coming to her house which is on fire. The answer to her call is interrupted when a sudden kick is exchanged between the two firemen. Liz kneels and talks to both boys, explaining that kicking hurts others and that we must tell someone we are mad instead of kicking.

Now let's retrace the development of the block and dramatic play sequence and assess the teacher's role using the six steps. First, anticipation-- while planning a field trip to a fire station where Ronnie's father works as a fireman, Liz anticipated with her student teachers that Ronnie and his classmates probably would represent through their block structures and dramatic play the events witnessed at the fire station (embellished most likely with a few impressions from television.) She told her student teachers what Piaget says about the role of imitation in learning. In addition, Liz reflected that as a whole this particular group of children often participated in dramatic play if provided a suitable play environment and props. For Ronnie, as a new and younger child, Liz hoped that the trip might serve to enhance his self-image and facilitate his movement into the established play group.

Second, analysis-- in considering specifically what the children might do, Freda, one of the student teachers of whom Ronnie was very fond, thinking of the prerequisite psycho-motor skills necessary for block building, observed Ronnie's

often hasty and clumbsy movement patterns, saying she felt having the firehats placed in the block area might facilitate his involvement and enhance his eye-hand coordination and large muscle control.

Third, arrangement-- the day after the field trip, Liz placed the red firehats conspicuously in the block area, itself adjacent to the dramatic play area. Because of the versatility of the unit and hollow blocks she chose not to add additional props.

Fourth, attention-- during the morning exploratory learning period, Liz remained in the vicinity of the block and dramatic play areas, listening and watching attentively.

Fifth, articulation-- Liz selected two specific teaching moments for the facilitation of learning; the first when she chose to query Ronnie about the size relationship of this two towers, the second when she witnessed Randy and Robbie's conflict and decided to intervene and remind them of the cause-and-effect relationship of kicks and anger and the social convention that kicking is not allowed.

And sixth and finally, assessment-- looking back over the morning Liz and her student teachers discussed the teacher-child-materials interactions. Liz shared her observations that Ronnie had mustered sufficient coordination to keep his tower from falling down. She also noted that Ronnie has been aware of the equivalence of his first two structures in height. As a result, the teachers decided to note Ronnie's level of awareness of other logico-mathematical relationships and to make a point of planning several outdoor activities such as obstacle course running which might facilitate Ronnie's locomotor skill development.

Obviously all encounters imagined will not occur, but practice teaching according to these six steps will enable one to more appropriately respond in a spontaneously occurring teaching moment. Practice in the pooling of the collected observations of the individual teacher or teaching staff, brainstorming potential involvements of children, and deriving subsequent teaching roles for specific

activities may be accomplished in one of several ways. A worksheet such as the one I have used to introduce Piaget's educational implications to parents and students, (Appendix A) the activity plan format employed by my colleagues with their student teachers in a cognitive developmental preschool program, (Appendix B) or even a log or notebook can be used. But more important than the method selected is the very practice that enables the teacher to capitalize with increased alacrity on the teaching moments like one I would like to share and with which I will close.

One morning in a friend's classroom some children were playing with beanbags, tossing them into assorted containers one after the other. One of the children started rubbing her fingers over the bag that she was getting ready to toss. "What's inside?", she asked, as much to herself as to the teacher, my friend, who was observing nearby. "Well, how do the things inside feel; are they hard or soft; are they big or little?", the teacher asked. Just then a bean fell out from a hole in one of the other children's bags. Four children huddled closely together with the teacher now, as they examined the hardness and smallness of the tiniest of navy beans. "I want to see inside," another child complained. "H'm-m-m, how can we see inside?", the teacher pondered aloud. "Break it open," one child said. "Step on it," offered another. In turn the teacher asked, "Well, if we're going to step on it, whose shoe will do the best job?" She looked around the rug at her own and each of the children's shoes. She alone was wearing hard sole shoes, while the children were all dressed in tennis shoes. "Your shoe," the children shouted simultaneously. Taking my friend's clog, one child fiercely wacked [redacted]ean. Together the children and teacher stared at the now several pieces. "I can't see anything," the same child complained. The teacher replied, "I wonder how we can see the tiny insides better?" Scooping up their previous bean bits the children dashed across the room to the science area and, placing the bean underneath the magnifying stool, pressed their noses to the glass and gazed intently.

Appendix A

ACTIVITY PLAY

Making Construction Paper Mobiles

Activity: Making a mobile with shapes cut from construction paper, lengths of wire or drinking straws, and string.

Goals:

1. Representation: Creating or tracing two-dimensional representations of familiar objects in the child's environment;

2. Physical knowledge: Understanding physical properties of hanging objects;

3. Social knowledge: Identifying characteristics of common objects such as color, geometric shapes, and the names of the represented objects.

Type: Craft Activity: Promoting fine motor and eye-hand coordination through tracing, cutting, using hole punch, threading string through holes.

Process: The major emphasis of this activity may be representation, physical knowledge, or social knowledge.

Representation: The mobile is constructed from 20 representations of objects in the real world whether drawn by the child or traced from templates. Objects might be animals, household items, transportation vehicles.

Physical Knowledge: Mobiles have interesting physical properties. They invariably hang vertically, yet they move freely. Each mobile piece is strung to another through a hole which the child punches.

Questions might include: "How can we tie these pieces together?"
"Is there a way to make the car hang upside down?"

or after the mobile is completed: "How can we make the mobile move?"

Questions can also be related to hanging pieces on wire or straws and balancing the pieces.

Social Knowledge: The mobile is constructed with either precut construction paper pieces or traced from templates. Pieces might be geometric shapes, letters, numbers, colored pieces of paper.

Questions might include: "Can you find a yellow square for us to hang on our mobile?"
"What animal are you tracing?"

Materials: Construction paper, or other paper which the child can cut.
Templates for tracing (optional)
Hole Punch
String
Scissors
Crayons or magic markers
Wire pieces or drinking straws

Implementation:

1. Child draws or traces shape for mobile and cuts it out.
2. Child punches holes in top and bottom of piece.
3. String placed through top hole of piece is tied through the hole of the shape above. Also, two pieces can be tied to each end of a drinking straw or wire and the wire then hung from the shape above.
4. Children can decorate shapes before or after they are hung together.

Extension: Have children construct several mobiles of equal length and experiment with handing them at different heights. Are the mobiles still the same length?

This can be a group or individual project.

Appendix B

Activity: Styrofoam and Toothpick Sculptures

Use the following spaces to brainstorm what the child may be learning in this activity and what you as facilitating adult subsequently might do:

Area of Knowledge	What Child May Be Learning	What Adult Might Do or Say
Social	Names of the objects	"This white material is called styrofoam."
	Rules for behavior	"Toothpicks are only for sticking into styrofoam, not people."
Physical	Styrofoam weighs very little and feels light, not heavy	"I wonder if this styrofoam is very heavy."
	Toothpicks can stick into styrofoam	"How can we put these toothpicks and styrofoam together?"
Logico-mathematical	Objects can be: placed in one-to-one correspondence (child may stick one toothpick into each single piece of styrofoam) seriated (child may put a series of sculptures in order from smallest to largest) classified (child may put all the styrofoam in one stack, all the toothpicks in another)	The adult may want to verbally reflect with the child on the relationship the child has spontaneously created, saying for example, "I see you have put one toothpick into each piece of styrofoam."
Space and Time	A tall, skinny structure occupies less space on the table surface than a fat, squatty one	"Whose structure takes up more room on the table?"
Representation	Toothpicks and styrofoam can be combined to represent other objects in the real world	"Can you tell me about what you are building?"

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What Does Piaget Have to Say About Children's Social-Emotional Development? [1]

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The derivation of Piaget's theory to form programmatic implications for early childhood education has primarily focused on the way in which children develop cognitively. Yet Piaget's theory can, and should be applied to all areas of development. While different aspects of development such as cognitive and socio-emotional growth may be considered separately for the purposes of constructing goals and objectives for early childhood programs, the intrinsic interaction of these areas must be foremost when talking about the whole child. Thus, when discussing social-emotional development, it must be considered within the context of cognitive development, and vica versa. Indeed, the social and emotional development of the child is a most pervasive factor which has many ramifications for cognitive growth. Kamii (1977), in her careful translation of Piaget's theory into goals for early education, notes that the educator must consider cognitive goals within the larger sphere of the overall social-emotional development of the child.

Teachers and developers of programs for young children must be careful to pay adequate attention to the provision of an optimum environment for social-emotional development. Without a strong base of emotional health and well-being, the overall development of the child may be affected. An unhappy, upset child, lacking in initiative, confidence and trust, will have a difficult time in school. Being attuned to children both cognitively and emotionally, we can become aware of where individual needs and interests lie. This is important not only for structuring interactions with individual children, but also to serve as information to feed back into the general organization of activities in the classroom.

The purpose of this paper is to show that some of Piaget's most significant ideas about how children develop intellectually have important implications for social-emotional goals in early childhood programs. It

has already been noted that these goals for social-emotional development have always been an integral part of early education. What is important is to tie these ideas into a sound theoretical framework, not only in order to provide a rationale for such goals, but also to demonstrate a way in which all areas of development interact, and may be considered unified.

The format of this paper consists of three sections. First, some general implications fo cognitive-developmental theory for social-emotional goals in early childhood programs will be presented. Second, some specific suggestions as to how teachers can implement these goals within the classroom will be discussed. Finally, the implications of these goals for the role of peer interaction will be examined.

General implications of cognitive-developmental theory for social-emotional development

What are some of the general principles of cognitive-developmental theory that apply to social-emotional development? One of the primary characteristics of preoperational thought is centration, the tendency to focus upon one aspect of an object or situation, with an attendant failure to coordinate different attributes of these objects or events. Within the social and emotional realm of development, centration is most apparent in the egocentrism of young children. The child's inability to take another's point of view into account is often the cause of what might be considered "selfish behavior". Through increasing interactions with other people, the child eventually learns that there are different ways of viewing situations which must be considered when dealing with people. As teachers, it is important to understand this concept of egocentrism not only in terms of developing

methods to reduce egocentric behavior, but also lest we have unreasonable expectations about what the child is capable of accomplishing.

Another implication of cognitive theory that is an important component of social-emotional development is the process by which children develop their sense of right and wrong, and subsequently construct a set of rules with which to cope with the world. Many of the processes of thinking that apply to the development of different types of knowledge mentioned in the other papers in this symposium also apply to this area of moral development. Piaget stresses the importance of the development of a sense of autonomy as providing a base for the construction of moral rules. As with the development of knowledge, this process of construction occurs within the child, rather than being instructed by adults. The child's desire and willingness to cooperate and consider the rights of others comes about because of the need for mutual respect and trust. The relationship between this and egocentrism is essential. According to Kamii and DeVries (1977), the process of cooperation requires a great deal of decentration and interindividual coordination. The child must be capable of considering personal rights and needs as one factor and the rights and needs of another individual or group as another, equally important factor.

Finally, important to both cognitive growth and strong social-emotional development is the child's sense of well-being. This not only includes feeling good about oneself, but also being confident that one's questions and abilities to seek out and solve problems are worthwhile and important ventures. The motivated child is one who is confident and able to speak with assurance and conviction. This delight and interest in one's own abilities thus becomes the motivation for accomplishing an activity.

Objectives for social-emotional development in the classroom

How do these basic ideas derived from cognitive-developmental theory translate into actual objectives and practices for social-emotional development in the classroom? While knowledge of the theory can help the teacher to understand and be more sensitive to the needs of the child, certain skills for interaction are also necessary. The skills can be learned, and may encompass and include the following behaviors.

Foremost, we must treat children with respect, recognizing and being attentive to their needs as individuals. Consistent with cognitive theory, respect for children's abilities can help to foster the development of autonomy. Children who are encouraged to think on their own, rather than always turning to the teacher for the right answer, begin to feel good about themselves and start to trust their own ability to make sound judgments.

By respecting children, we are, in turn, encouraging them to respect the rights and opinions of others. As already noted, treating others as one would like to be treated involves decentration and coordination of different points of view (Kamii and DeVries, 1977). The child must coordinate his or her own perspective with the perspective of others in order to understand how they feel.

There are several actions which the teacher may incorporate which show respect for children. First, it is important to acknowledge feelings. One way to do so is to listen to what children have to say. This is important not only in order to understand what is going on in the child's world, but also to show children that they are worthwhile and have good ideas. Thus it helps to develop a positive self-concept. In turn, children will be more like to cooperate with and respect the teacher when they know that the teacher

wants to hear what they have to say. For example, sitting down and listening to Beth tell you of a nightmare she had last night not only shows that you care and understand her fear, but also can help your as a teacher to understand why she is cranky and uncooperative today. In such a manner, both child and teacher benefit from this interaction. Additionally, by listening to and responding to the child's feelings, the teacher is providing an important model for the child's own interactions with peers and other adults. It should also be noted that good listening skills extend to nonverbal as well as verbal communications.

Another action to facilitate respect is honesty. The child truly shares and is autonomous when a spirit of cooperation exists. This cooperation, which is based on mutual respect, is facilitated by being honest with children. Although they may not know the words to express the feeling, young children can often sense dishonesty and mistrust. Park of acknowledging feelings and being honest is to let children know your feelings. For instance, teachers should tell children when they are angry, as long as they explain the reason for this anger. If it is demonstrated in an acceptable manner, this provides a possible model for ways in which to express anger.

The second important objective for social-emotional development derived from theory is the promotion of a positive self-image. Feelings of well-being, self-confidence and competence stem from the child's own self-image. If children feel good about themselves, they will be more willing to trust their own knowledge and abilities, instead of continually looking to others for acknowledgement and encouragement. Children who are encouraged to speak with assurance will be more confident of their own ability to solve problems, and, in Duckworth's (1973) words, to "have wonderful ideas". Several actions on the part of the teacher can help to promote a positive self-image.

First, teachers should encourage children to make their own choices, rather than continually deciding things for them. In this manner, we can help children to become accountable for their own actions and begin to develop their own system of rules of conduct. For example, during a free choice activity period, the child's own decision is what motivates him or her to participate in certain activities, rather than as required by the teacher. If David becomes involved in the fishing game and does not get a chance to help bake cookies, this is his decision and perhaps tomorrow he will regulate his time more carefully so that he can participate in more than one activity.

A second way in which to encourage positive feelings and self-confidence is to include opportunities where children can learn about themselves. This includes such traditional activities as looking in the mirror, drawing self-portraits, talking about feelings and emotions, and identifying parts of the body and types of clothing.

Third, becoming an individual and not just one among many occurs when the teacher takes the time to address children by name. Other children learn names faster when they hear these being used and thus are able to address each other properly. This in turn serves as an aid in the reduction of egocentrism as children begin to consider each other as individuals.

Another way to promote feelings of confidence and competence is to remember to include activities in the day's schedule that children are familiar with and can be successful at. While new activities are often exciting and challenging, children can feel bewildered when there are not opportunities for them to exercise their mastery of familiar routines and strategies.

The third objective derived from theory is to encourage curiosity and creativity, and consequently, initiative and independence. The activity necessary to cognitive development is also important to the development of

social skills. Thus curiosity and creativity are fostered as the teacher encourages active exploration on the part of the child. Similarly, interpersonal relationships expand and develop as children become curious about others in their world.

The teacher provides opportunities for such active exploration by accepting children's ideas and challenging them with questions for further stimulation. Physical knowledge, for example, involves a model for critical thinking and problem solving which accepts and encourages such curiosity. If the teacher mixes blue and yellow food coloring together and explains how these colors make green, children may attribute this to adult "magic". By making colors available to children to experiment themselves, however, their own curiosity and initiative may stimulate a solution to the problem. Even if the solution, to our adult way of thinking, is wrong, the satisfaction the child feels from working on a problem may serve as impetus at some later time for a more appropriate solution. An incident that occured in my classroom may serve as an example. A four year old boy, Matthew, was attempting to remove a piece of play paper money which was stuck behind the drawer space of a toy cash register. In his eagerness at finding a way to pull out this dollar bill, Mattew experimented with all sorts of objects which were obviously, to my teacher's eye, too wide to even fit into the space, much less extract the money. But by letting him experiment as long as he wanted, which involved a rather elaborate process of trial and error with every conceivable block and utensil in the classroom, Matthew derived alot of satisfaction and sense of himself as a "solver of problems". It was not important that another child, watching this procedure, strolled by and pulled out the money with a pencil on the first try, because this did not detract at all from Matthew's experimentation.

This same process of exploration and experimentation extends into interpersonal interactions. The problem-solving approac h can be adapted and used by children to resolve differences in conflict situations. While it is not within the scope of this paper to discuss strategies for child guidance, it may be mentioned just briefly that one way in which to resolve differences between children is to encourage them to discuss and work out a mutually satisfactory solution. The teacher serves as an arbitrator in this decsion-making process, rather than as a direct intervener.

The importance of peers for social-emotional development

Finally, I would like to discuss the importance of peers for social-emotional development. It was noted earlier that interaction with peers is a significant factor for both cognitive and social-emotional development. Through interactions with other people, children learn a great deal about and become proficient at social relationships. Egocentrism may be a source of difficulty in dealing with others. The child must be able to decenter, that is, to see more than one aspect of a situation at a time. The desireability and need for good social relationships can do much to increase decentration, and develop the abilities to cooperate and share. Because of these functions, it becomes important to promote peer interaction, even though at times these interactions may be stressful.

How is it that peers play a significant role in facilitating cognitive development? One reason is that peers are not as understanding and accepting of a child's egocentrism as an adult is. Whereas an adult may be willing to interpret the child's egocentric actions or communications, peers may demand that the child explain these actions. For example, the child who asks "give me that" instead of "give me the red block" and expects others to

understand, may find that his or her peers are not as patient as an adult might be. Thus, peers help to reduce egocentrism through their unwillingness to accept and cater to the egocentric child. This promotes cognitive development in several ways. First, it helps the child to realize that there are different ways of viewing a situation. Second, it forces a reorganization of knowledge so that the child can communicate effectively with others. Third, peer interactions can be astrong source of cognitive conflict. Children may demand and ask questions that will cause a discrepancy between the child's present cognitive structures and the situation as it is experienced. Once again, this may force a reorganization of knowledge which can help to extend the child's own developmental level, or even expand to the next level. For instance, in a bead-stringing activity, one child may be able to group beads by one criterion, color, while another child can classify according to multiple criteria, such as color and size or shape. In order to understand the way in which this child is grouping beads, the first child must begin to extend cognitive structures to include the concept of multiple classification. In socio-dramatic play, the reenactment of incidents from home often occur. While these scenes may be important and familiar to the child who initiates the play, in order to include others he or she must decenter in order to explain the situation and the roles to the other participants.

Within the realm of social-emotional development, relationships with peers serve as one dimension of interpersonal interactions. There are several positive outcomes of these interactions. First, children learn that others have feelings and rights just as they themselves do. A sense of justice and a moral code is developed as interactions help to determine what is fair and just and what is not. The arbitration model for resolving arguments already noted may serve as an example, If there is only one tricycle,

three children will have to arrive at a mutually satisfactory way in which to share it.

Second, friends can also do much to help promote a positive self-image through their acknowledgement and admiration for each other's capabilities. For instance, two children who often had difficulty establishing interactions with others were able to comment on and exclaim over each other's paintings while at the easels one day. Both were visibly pleased with this attention.

Third, it is through interactions with others that the child learns what it is like to be the member of a group. The larger requirements of the group may force the child's own needs and interests to assume a subordinate status. Thus if ten children want to see and hear the flannel board story, the one child who is standing and talking must be quiet and take a place on the rug for the benefit of all. These group interactions also provide an opportunity to learn how to communicate with more than one person.

Many of the types of interactions just mentioned may seem stressful for the young child as they often involve a certain amount of tension and even conflict. Yet this stressfulness can yield positive benefits. The reduction of egocentrism, decentration, and the creation of cognitive conflict can arise out of these situations. Social interactions that may be emotionally charged help the child learn inter- and intra-personal skills. For example, a child who constantly interruptsthe large group activities may suffer the wrath of the rest of the group. Another example of positive results of stressful situations may be found in motoric activities. While the development of psychomotor skills certainly should not be forced because other children are skilled in certain areas, the excitement and freindship which are naturally a part of group activities may provide motivation for the unsure child. For instance, if climbing on the jungle gym is part of a game of "explorers", a

child who is somewhat fearful of climbing may be more inclined to join in if expected to and encouraged by others. Of course, it is important to remember that a stressful situation is not useful or beneficial if it involves any physical harm or verbal abuse such as taunts or name calling.

The role of the teacher regarding peer interaction is, in general, that of a facilitator. Primarily, the teacher structures the environment so that peer interactions are more likely to occur. Activities, whether spontaneous or planned, can encourage cooperative involvement between children at several different levles: the large group, the small group, or between individuals.

At the large group or circle time, rather than having information and communication flow just between teacher and child, activities can be developed which necessitate direct interaction between members of the group. For instance, the "Farmer in the Dell" game requres that children join hands, move in a circle, and listen to the words and actions of those in the middle. "Simon Says" can use a child as Simon instead of a teacher.

Within small groups or among individuals, teachers can utilize cooperative projects that require children to work together. One such game is called "matching balloons". Child join two pieces of a construction paper balloon by color and shape in order to complete a picture of a balloon vendor. Other examples include making collages, murals, etc. Children can work at these activities together with minimal assistance from a teacher. As children are together in activities such as outdoor play, socio-dramatic play, puzzles, small manipulatives and constructions projects, and arts and crafts, interactions between peers will be plentiful and spontaneous.

Finally, teachers can enlist the help of children to tell newcomers about an activity or to assist others. Instead of continually explaining

directions or what is going on, teachers can suggest that those already involved in the project explain it to newcomers. If the activity is cooking, for instance, one of the children already involved can tell the child entering the activity what they are making, how it is made, etc. In the same vein, children can help each other with things that would normally requre the aid of a teacher. Cutting, pasting, and cleaning up spills are all actions that children can help each other with.

Summary

In summary, it has been shown that the application of Piagetian theory to early childhood education programs can and must encompass all aspects of development in order to consider the whole child. The principles and rationale underlying the theory include goals and objectives which extend to social-emotional growth and which are derived from basic ideas about how children learn and develop through interactions with their environment. Specific suggestions for ways in which teachers and program developers can translate these overriding principles into actual classroom practice have been delineated. In particular, the way in which peer interaction can influence and expand the social-emotional development of the young child was discussed. By providing a theoretical framework within which to explain and understand how all aspects of development intrinsically interact, we can indeed rediscover the child in early childhood education.

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