Developing Constructivist Early Childhood Curriculum

PRACTICAL PRINCIPLES and ACTIVITIES

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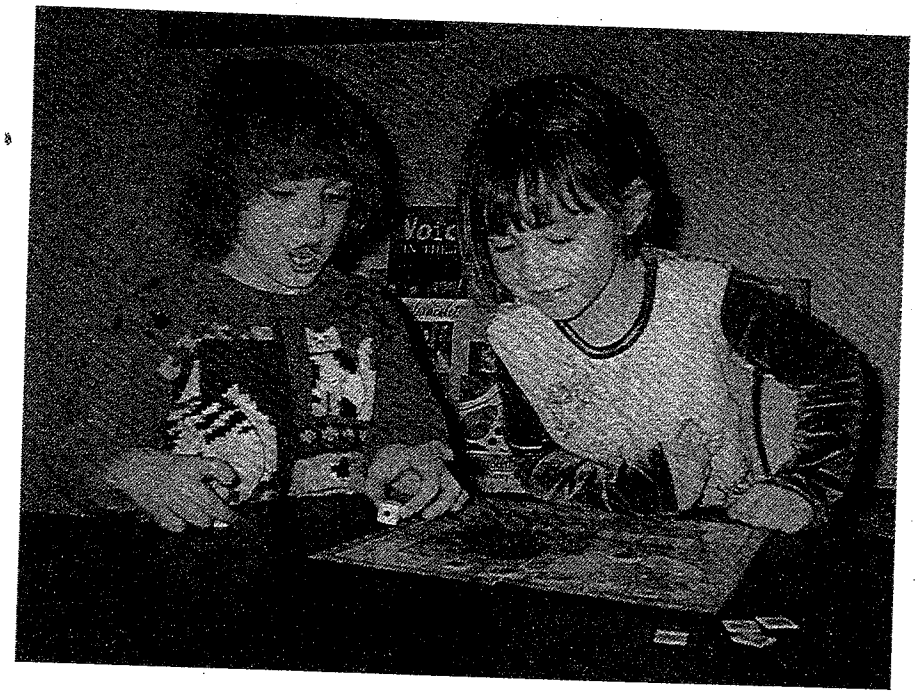
Intro's Ch. 1



Introduction

Rheta DeVries

Four-year-olds Quenisha, Donell, and Ryan build a complex block structure that incorporates ramps made of several lengths of cove molding. They want their balls to roll from one ramp to the next and are surprised to see them stop time after time at a sharp-angled junction between ramps. They make small adjustments between the ramps, but still the balls stop at the junction. The teacher observes their difficulties and asks Ryan to show her with his finger where he wants his ball to go. As he traces the sharp angle of the ramp path, the children see the need to straighten it and do so together. They exchange smiles and cheers as their ball rolls down both ramp segments in a straight line.

This vignette illustrates how children's interests can lead them to experiment and cooperate to solve a new problem. It also shows how teachers can come up with interventions that foster new and more adequate reasoning. We hope this and other stories we tell in this book will help teachers construct a more elaborated vision of constructivist early education.

Our book provides a constructivist interpretation of developmentally appropriate curriculum in preschool and kindergarten. It has two aims. The first is to extend descriptions of constructivist teaching beyond those offered in my previous books on physical-knowledge activities and group games (Kamii & DeVries, 1978/1993, 1980). In those books, the activities described were conducted only once with children. What is missing is an account of how activities are transformed over time and how children's reasoning is transformed in the course of extended experience with a physical phenomenon or group game. In this book, we provide accounts of transformations over time in materials, activities, teacher interventions, and children's reasoning. We show how the teacher's thinking about children's thinking influences modifications and extensions of activities. As in the past, we are inspired especially by the research and theory of Jean Piaget.

The second aim of this book is to put these accounts of constructivist teaching in the context of the play-oriented curriculum advocated by the

National Association for the Education of Young Children (NAEYC). My coauthors and I identify with the position statements of NAEYC that advocate developmentally appropriate practice (Bredekamp, 1987; Bredekamp & Copple, 1997; Bredekamp & Rosegrant, 1992, 1995). We believe that these position statements reflect the constructivist view that learning is the result of efforts to make sense of the world. In their discussion of "Principles of child development and learning that inform developmentally appropriate practice," NAEYC authors state that these principles "are based on several prominent theories that view intellectual development from a constructivist, interactive perspective" (Bredekamp & Copple, 1997, p. 13) and cite Piagetians (Piaget, DeVries, Kohlberg, Kamii, and Ewing) and Vygotskians (Vygotsky, Berk, Winsler, Bodrova, Leong, and Rogoff).

Piaget's constructivist theory provides the research base and theoretical underpinning for the constructivist interpretation of curriculum presented in this book. Part I focuses on theoretical and practical foundations for developing constructivist early childhood curriculum, and Parts II and III offer detailed descriptions of classroom activities (using pseudonyms for children's names) and principles of teaching followed by constructivist teachers. We try to show how teachers we know transform their teaching so as to enable children to transform themselves. Part II presents examples of physical-knowledge activities, and Part III focuses on group games. Throughout, we emphasize the importance of a sociomoral context of mutual respect, the focus of a previous book (DeVries & Zan, 1994).

In this book, we write about how teachers transform curriculum in a constructivist direction and how this curriculum transforms children. Our effort to illustrate how to transform curriculum takes off from NAEYC's third position statement dealing with transforming curriculum (Bredekamp & Rosegrant, 1995). This statement moves beyond previous ones to show how a developmentally appropriate integrated curriculum can foster knowledge of content in subject matter disciplines. It attempts to resolve the tension between the

> "early childhood error" (inadequate attention to the content of curriculum in preschool programs) and the "elementary error" (overattention to curriculum objectives, with less attention to the developmental characteristics of young learners or the specific needs and interests of young children). (p. 174)

In the NAEYC statement, however, learning processes remain general and are not elaborated within the context of specific activities. We hope to supplement the NAEYC effort by showing how to meld the teaching of content with children's construction of the relationships that constitute intelligence.

PART I

UNDERSTANDING CONSTRUCTIVIST EDUCATION

Rheta DeVries

The position statements of the National Association for the Education of Young Children support the constructivist view of play as critically important for children's development and education: "An essential component of developmentally appropriate practice" is "child-initiated, child-directed, teacher-supported play" (Bredekamp, 1987, p. 3; Bredekamp & Copple, 1997, p. 14). This emphasis on play carries on a long tradition in early education and child development (for example, beginning with the ancient Greek Aristotle, trans. 1932, and progressing in modern times through Froebel, 1826/1999; Dewey, 1913/1975; Freud, 1913/1950, 1920/1974; Isaacs, 1930/1966; Klein, 1932/1975; Piaget, 1945/1962; Pratt, 1948/1970; Smilansky, 1968; Erikson, 1977; Fein, 1981; and Fein & Rivkin, 1986). Our book builds on the current scientific consensus about the role of play in high-quality early education and attempts to move the discussion a bit further.

As we take up this task, it is important to acknowledge the political problem for advocates of a play-oriented curriculum. This problem is due in part to the failure of both critics and advocates to distinguish between developmental and maturationist worldviews. It is also evident that too often early childhood educators rely on global justifications of play that leave the impression that it is trivial. These ideas are discussed below.

THE POLITICAL PROBLEM WITH PLAY-ORIENTED CURRICULUM

We see our book in part as a response to the political problem encountered by advocates of developmentally appropriate and constructivist practice. That is, the historic advocacy of a play-oriented curriculum has unfortunately had the

Chapter 1

Play in the Early Education Curriculum: Four Interpretations

Rheta DeVries

Over the course of observing many preschool and kindergarten classrooms, I have been struck by the wildly diverging range of practices flying the flag of developmentally appropriate practice (DAP) or constructivist education. With the widespread acceptance of DAP as the definition of the best early education, the advocacy of a play-oriented curriculum has become "politically correct." Yet many teachers do not really understand or accept the developmentally appropriate approach with its emphasis on play. Consequently, teachers assimilate the politically correct notions into their own beliefs and understandings. The problem, as I see it, is that teachers often interpret the idea of play-oriented curriculum in different ways and express these interpretations in a wide variety of often contradictory classroom practices—all of which they label "play-oriented curriculum," even though they often depart in significant ways from DAP. The result is agreement at the level of rhetoric but disagreement at the practical level of children's experiences in classrooms. It is with a desire to foster more focused dialogue on what is desirable for children to experience in high-quality early education that we write this book.

As an aid to reflection, I present four types of classrooms that show four different interpretations of how to incorporate play into the curriculum:

Classroom Type A: Play is peripheral to learning and academic work.
Classroom Type B: Play is disguised academic work.
Classroom Type C: Play is integrated with social and emotional development.
Classroom Type D: Play and work are integrated with social, emotional, moral, and intellectual development.

While the following descriptions of these types are based on numerous classroom observations, the types are composites and not descriptions of any single, particular classroom. One finds many classrooms that are pure ex-

result of attracting criticism from those who view play as "aimless" (noted by Fein & Rivkin, 1986), "of little importance" (Montessori, 1936/1956), or as "irrational," "dangerous," "a nuisance," "disorderly," or "subversive" (Montessori, 1916/1965; 1949/1967; noted by Sutton-Smith, 1986). Weber (1969) suggests that "acceptance or rejection of the educative value of play is rooted in the Puritan ethic" (p. 221). Similarly, Rubin, Fein, and Vandenberg (1983) point out that "The Puritan ethic dichotomized work and play," viewing work as "an extension of God's work" and seeing play as "the province of the devil" (pp. 697–698). They note that although this idea is less pronounced now, it still "contributes to the relative disregard of play as an important topic for study" (p. 698). Piaget (1945/1962) acknowledged the problem this way:

> In spite of the prophetic visions of the great educationists, play has always been considered, in traditional education, as a kind of mental wastematter, or at least a pseudo activity, without functional significance, and even harmful to children, keeping them from their homework. (p. 151)

As shown below, Piaget did not agree with the traditional view. He saw play as an important and necessary vehicle for children's cognitive development and provided scientific evidence for his views.

Unfortunately, some contemporary writers associate play with entertainment rather than with education. For example, Damon (1995), a developmental psychologist, notes that implementation of child-centered, constructivist education "generally means a laissez-faire approach" (p. 102) and that "early education in most places has become a grab bag of loosely structured story telling, singing, untutored arts and crafts, play activities, and frequent partying" (p. 104). This kind of erroneous characterization could lead to the demise of developmentally appropriate and constructivist education. That is, if play is viewed as trivial, then play-oriented curricula will also be considered trivial and of little or no educational value. I begin by examining the issue in terms of a failure to distinguish developmental and maturationist worldviews of learning and development.

Failure to Distinguish Developmental and Maturationist Worldviews

The controversy over play-oriented curriculum reflects in part a confusion between two streams in educational thought noted by Kohlberg and Mayer (1972): (1) maturationist, and (2) cognitive-developmental. The romantic maturationist stream is based on the idea that the child's naturally occurring development should be allowed to flower without adult interventions in a laissez-faire, permissive environment. In contrast, the cognitive-developmental

or constructivist stream is based on the idea that the dialectic or interactionist process of development and learning through the child's active construction should be facilitated and promoted by adults. A third stream in educational thought conceptualized by Kohlberg and Mayer is the cultural transmission or behaviorist stream reflecting the view that all knowledge results from information coming from outside the individual to the inside and thus requires didactic adult transmission. (See also DeVries & Kohlberg, 1987, for a discussion of these three streams.)

Criticism of the play-oriented curriculum is most commonly heard from behaviorist critics of the developmental approach who mistakenly assume that developmentally appropriate and constructivist education falls in the maturationist stream. For example, Stone (1996) describes the developmental view as valuing "naturally occurring developmental progression" where "frustration and delayed gratification are to be minimized while immediate success and satisfaction are to be maximized" (pp. 16, 18). On the basis of these mistaken ideas about developmentalism, Stone goes on to criticize educational efforts that seek to be "child centered," "progressive," and "developmentally appropriate," through efforts to promote "reflective thinking," "authentic learning," "hands-on experiences," "discovery learning," "cognitive apprenticeship," "whole language," and "emergent literacy" (pp. 20–21). These terms, so dear to developmentalists, are summarily dismissed by Stone as "obscure but pervasive restriction on educational improvement" (p. 2). Further, he states that "developmentalism discourages teachers and parents from asserting expectations or otherwise acting to induce more mature behavior" and "encourages tolerance and acceptance of immaturity, irresponsibility, and failure" (pp. 7–8).

Developmentalists certainly do not recognize themselves in this preposterous portrayal of their views as leading to permissive programs of frivolous play in which teachers take a "hands-off" attitude. Consider the following statement of Piaget (1948/1973) in which he also criticizes giving children complete freedom:

> A few years ago the main trend, especially owing to the widespread influence of psychoanalysis, was carefully to avoid frustrating the developing child in any way. This led to an excess of unsupervised liberty which ended in generalized play without much educational benefit. (pp. 6–7)

This remark introduces the matter of concern in this book. We need to develop a way of thinking that helps us distinguish what is of educational benefit to children and what is not. A barrier to this goal is the tendency of early childhood educators to rely on global notions of play to justify and describe their play-oriented curriculum.

Reliance on Global Notions of Play

Global notions of play include vague general statements to justify the play-oriented curriculum and vague characterizations to describe play in early education.

Vague General Statements about Play. I would like to point out that we developmentalists are partly responsible for the false accusation that developmentalists are romantic maturationists who let children waste their time in frivolous play. We often articulate our views vaguely in ways that make us seem like maturationists. For example, one easily finds popularized slogans such as the following in books on early education:

> The primary program is designed to incorporate play as a way of learning for all primary children. (Nebraska Department of Education, et al., 1993, p. 27)
>
> Play is the child's work. (Turner & Hamner, 1994, p. 195)
>
> Children play to discover and master experience. . . . Children play to learn. (Read, 1976, pp. 25, 200)
>
> Play promotes the development of both mental and social abilities in children. (Bodrova & Leong, 1996, p. 57)
>
> Teach in the context of the child's play. (Kamii & DeVries, 1975/1977, p. 383)

Similarly, in its first position statement on developmentally appropriate practice, NAEYC states that "children learn most effectively through a concrete, play-oriented approach to early childhood education" (Bredekamp, 1987, p. 1) and asserts that "Children need years of play with real objects and events before they are able to understand the meaning of symbols such as letters and numbers" (p. 4).

These vague general statements, of course, are not wrong and may be a good starting point. Certainly, many developmentalists, including those cited above, have discussed developmentally appropriate and constructivist practices in ways that go beyond slogans to provide detailed examples and principles of teaching. Yet, when teachers do not go beyond the slogans, their superficial understanding may lead them to implement a play-oriented curriculum that at best may be nothing more than entertainment. More often the play activities provided simply reflect an underestimation of what children can do.

The problem is that when teachers are not given detailed descriptions of activities and explanations of how development and/or subject matter learning arises from them, misinterpretations are bound to occur. Just such misunderstanding led to efforts to clarify the 1987 NAEYC statement. In 1992, Bredekamp and Rosegrant say that "the worst misinterpretation of developmentally appropriate practice is that if teachers just let children play, at Grade 3 they emerge literate" (p. 5). The necessity for this kind of clarification stems partly from the fact that developmentally appropriate practice and constructivist education are not intended to be curricula. They are approaches that offer a general philosophy and principles of teaching that must be interpreted by teachers in the course of life with children in classrooms. Therefore, constructivist education and developmentally appropriate practice are always open to misinterpretation. We therefore need clearer descriptions of exactly what *is* developmentally appropriate and constructivist practice at the level of daily experiences of teachers and children. We hope this book contributes to such clarification.

Vague Characterizations of Play. Play is often characterized in early education only in global, vague ways. These correct but incomplete characterizations include the following:

1. Play is active.
2. Play involves manipulation of concrete objects.
3. Play is interesting.
4. Play is the child's work.

Consider now how these incomplete characterizations fall short of developmentally appropriate and constructivist ideals.

Play Is Active. We developmentalists are fond of insisting that children in early education must be active. This notion is grounded solidly in Piaget's theory of the development of knowledge and intelligence. It is an important starting point. However, many early childhood educators reduce the idea of action to mere physical action and assume that as long as children are moving and talking, they are learning. For Piaget, however, action is not just physical but mental. If we are satisfied with an uncritical acceptance of any physical movement as educational, then any approach that allows children to move around and talk may claim the "developmentally appropriate" label. Instead, we must be specific about the kinds of activity that lead to specific benefits. Throughout this book we present activities in terms of their specific possibilities for promoting children's development and learning.

Play Involves Manipulation of Concrete Objects. Developmentalists in early education have emphasized the importance of children's engagement with concrete objects. Some cite as rationale Piaget's work on concrete opera-

tions that are brought to bear on thought about manipulable objects. Unfortunately, this idea is often watered down to the trivial recommendation that children simply manipulate objects. However, for Piaget, it is the capacity for *mental* manipulations that is important for development. In discussing active methods in education, Piaget (1969/1970b) noted that "although the child's activity at certain levels necessarily entails the manipulation of objects and even a certain amount of actual physical groping," operations "are derived, not from the objects manipulated but from the (mental) actions of the child and their coordination" (p. 68). Dewey (1933) was even more critical of the related maxim for educators to move from concrete to abstract, from things to thought. In his view, dealing with things without thought could not possibly be educative. Piaget and Dewey inspire us to understand *how children are thinking about objects* while manipulating them and how to promote the development of thinking about them. We follow their lead throughout this book by describing materials, activities, and interventions that inspire mental activity.

Play Is Interesting. NAEYC addressed the difficulty in knowing when children are interested by amending its statement and clarifying that its endorsement of play should not have been interpreted as supporting practices simply because they are fun.

> Sometimes teachers seem to use as their primary criterion for selecting curriculum, "But the children just love it!" Enjoying the curriculum is an important but insufficient criterion for curriculum selection. Worthwhile curriculum does not have to entertain children; instead, children's enjoyment can derive from positive findings about self and meaningful learning as they realize their own progress and growing competence. (Bredekamp & Rosegrant, 1992, p. 22)

Our developmental emphasis on the importance of children's interests is also well grounded in the work of Piaget and Dewey. Piaget (1954/1981, 1969/1970b) referred to the element of interest as the "fuel" for the constructive process. However, interest may be fleeting and shallow. Dewey (1913/1975) criticized "a false identification of interest and play with trivial amusement" and contrasted this with interest as "whole-hearted identification with what one is doing" (p. 80). If children are not interested, they do not think very deeply.

We extrapolate from Piaget and Dewey the idea that *children's purposes* must be engaged if an activity is to contribute to development and learning. Piaget indicated that the challenge is to identify content that intrigues children and arouses in them a need and desire to figure something out. He wrote sympathetically of the challenge facing teachers who want to appeal to children's interests and purposes when he said, "There is nothing more difficult for the adult than to know how to appeal to the spontaneous and real

activity of the child or adolescent" (Piaget, 1948/1973b, p. 105). According to Piaget, interest is central to spontaneous mental actions by which the child constructs knowledge, intelligence, and personality. Without the affective element of interest, the child would never make the constructive effort to make sense out of experience. Without interest in what is new, the child would never modify the instrument of reasoning. Interest performs a regulatory function, freeing up or stopping the investment of energy in an object, person, or event. Thus, for Piaget, methods aimed at promoting this constructive process must arouse the child's spontaneous interest that is inherent in purposeful activity. We must not forget that such interest is not mere entertainment. It is expressed as seriousness of purpose and perseverance.

Constructivist teachers thus encourage the development of children's interests and values through fostering their purposes in activities. In this book, we try to show how to appeal to children's interests and purposes.

Play Is the Child's Work. "Work" is often associated with academics—serious business having nothing to do with play. Some teachers who believe their approach is developmentally appropriate emphasize play to the exclusion of work, justifying it by stating that play is the child's work. This kind of apology for play fails to communicate the value of a play-oriented curriculum for children's learning and development.

Developmentally appropriate practice was originally conceptualized by NAEYC as a reaction to inappropriate programs of work emphasizing "teacher-directed instruction in narrowly defined academic skills" (Bredekamp, 1987, p. iv). One result of this movement away from narrow academic skills was that many people then interpreted developmentally appropriate practice as unstructured free play having little to do with academics such as reading, writing, and arithmetic. In my opinion, the exclusion of work from early childhood curriculum was unfortunate. It is useful on this point to consider how the relation between play and work was addressed by Piaget, Dewey, and Vygotsky—authors cited as inspirations for developmentally appropriate early education.

Piaget saw the capacity to work not as something opposed to play or having to be imposed on the child by adult instruction, but as something developing out of the play interest. That is, he saw symbolic play becoming more and more reflective of reality, developing "in the direction of constructive activity or work" (1945/1962, p. 112). For example, a child who pretends that a piece of wood is a boat may later really make a boat replica. Addressing the educational issue directly, Piaget wrote:

> In the course of its own internal development, the play of small children is gradually transformed into adapted constructions requiring an ever-increasing amount

> of what is in effect work, to such an extent that in the infant classes [for children ages 3 to 7 years] of an active school every kind of spontaneous transition may be observed between play and work. (1969/1970b, p. 157)

Note that in this view exploration and experimentation aimed at finding out something new are not considered to be play. Some of what is called "play" might be considered "work" in that it is not always pleasurable and may require intense effort and involve initial failure.

As Dewey pointed out, young children do not divide activities into utilitarian "work" and "play." Rather, "whatever appeals to them at all appeals directly on its own account" (1933, p. 215). Dewey commented:

> From a very early age, however, there is no distinction of exclusive periods of play activity and work activity, but only one of emphasis. There are definite results which even young children desire, and try to bring to pass. (1916/1966, p. 239)

Vygotsky (1933/1966) viewed play as fantasy that provides "a means of developing abstract thought" (p. 17) and as "the leading source of development in preschool years" (p. 6). He saw in fantasy play the use of implicit rules in acting out roles and, like Piaget, saw value in wish fulfillment and deferred gratification. Also like Piaget, Vygotsky saw the school-age child as moving from fantasy play to games with rules. Vygotsky emphasized the importance of fantasy play for children's practice of self-regulation skills. (See also Bodrova & Leong, 1996.)

In light of these ideas, it is not really accurate to say that play is the child's work. Evolution in forms of play reflects developmental advances that should be valued. Play is useful to children as they try to understand the world in which they live. Piaget, Dewey, and Vygotsky not only provide educators with a strong rationale for the value of play as well as work in early education, but also lead us to appreciate how work can evolve from play. This work is interesting to the "workers," engages them in reflecting on meaning, brings consciousness of purpose, leads to a search for means of realization, and moves toward coherence in thought. Thus we should expect to see all kinds of play and work in children's activities in developmentally appropriate and constructivist classrooms.

CONCLUSION

My colleagues and I approach the task of elaborating constructivist teaching by considering it in relation to three other interpretations of developmentally appropriate early childhood curriculum. Chapter 1 describes four types

of classrooms reflecting these different interpretations. In Classroom Types A and B, the emphasis is on academics. In Classroom Type A, play is peripheral to academic work and learning. In Classroom Type B, play is disguised academic exercises. In contrast, Classroom Types C and D share the goal of development. In Classroom Type C, play is integrated with social and emotional developmental goals. In Classroom Type D, play is integrated more broadly with social, emotional, moral, and intellectual developmental goals. Our principal aim for the book is to show how to transform the activities in the Type C classroom into the constructivist activities of the fourth type. In doing so, we hope our principles and examples will serve as guides to the creative work that reflective teachers must do to provide constructivist early education for young children.

Chapter 2 addresses the question "What is constructivist education?" by offering a definition and eight general principles of teaching. Chapter 3 takes up the issue of assessing and documenting learning in constructivist classrooms.

Early in this introduction to Part I, I said that wide misunderstanding of the nature of constructive and educational play could lead to the demise of constructivist and developmentally appropriate early education. I fear that if educators do not provide play-oriented curriculum that clearly leads to development and learning, those responsible for administering schools will turn away from developmentally appropriate and constructivist education, and the pendulum will swing back to traditional behaviorist approaches. We must conceptualize and describe what kinds of play/activities contribute to children's development and knowledge and how they do so. General justifications are not enough. It is up to developmental educators and researchers to present clear rationales for educational play/activity, and to be specific about the differences between generalized play and play that contributes to development.

Chapter 1

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Rheta DeVries

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While the following descriptions of these types are based on numerous classroom observations, the types are composites and not descriptions of any single, particular classroom. One finds many classrooms that are pure ex-

amples of each type, but it is perhaps more common to find classrooms that are mixtures of types. Although I try to characterize the classroom type as a whole, I focus on how center time is implemented. At center time, many different activities are simultaneously available to children. Descriptions of the four types deal with materials and activities and the teacher's role in promoting reasoning. In addition, I include a commentary on each from my constructivist perspective in which I show how the Type A, B, and C goals may be realized by transforming activities into alternative Type D activities. Table 1.1 summarizes the differences among classroom types in terms of goals, teacher's role, and materials and activities.

CLASSROOM TYPES A AND B: EMPHASIS ON ACADEMICS

In Classroom Types A and B, the emphasis is on academics. These types are rooted in the history of elementary education where the mainly academic goals focus on the acquisition of correct subject matter knowledge. This traditional approach reflects a behaviorist view of knowledge and learning as resulting from the direct transmission of information coming from outside the individual to the inside through the senses.

TABLE 1.1. Four interpretations of play in the early education curriculum.

Classroom Type	*Primary Goals*	*Teacher's Role*	*Materials & Play Activities*
A: Play is peripheral to learning academic work	Academic	Authoritarian	Limited; reward for academic work
B: Play is disguised academic work	Academic	Disengaged	Mostly shallow; trivial arts and crafts
C: Play is integrated with social and emotional development	Social and emotional development	Noninterventionist; warm and nurturing; sometimes mildly authoritarian	Abundant; often below children's capabilities
D: Play and work are integrated with social, emotional, moral, and intellectual development	Development and reasoning – social, emotional, moral, and intellectual	Interventionist; warm and nurturing; democratic	Abundant; challenging

Classroom Type A: Play Is Peripheral to Learning and Academic Work

In Classroom Type A, the emphasis on academic work leaves little room for play, and play is not integrated with academics. Type A teachers either do not have a developmental perspective or they are required by administrative policy to teach in a behaviorist way, with a focus on drill and practice, reward and punishment. In fact, Teacher A's school district usually emphasizes performance on standardized tests as the only acceptable evidence of children's achievement, and there seems to be little choice about how to teach.

Materials and Activities. Children in Type A classrooms spend almost the entire day in a steady stream of academic work, leaving the classroom to go to physical education, art, music, or library. For example, one might observe children being drilled on the color names of paper circles, time on a clock face, the number of cents in pictured coins, or letter sounds. They might recite the days of the week and the months of the year. They do a lot of worksheets on letter sounds and addition algorithms as they sit at their desks. In one Type A classroom, when children lined up to go to the bathroom, the teacher held a letter card for the child at the head of the line to identify. If correct, the child went down the hall to the bathroom. If incorrect, the child went to the end of the line. Art activities are teacher-directed, sequenced lessons that instruct children on how to create identical products such as rabbits with cotton tails. The result is an atmosphere in which children produce products such as worksheets and crafts that depend on teacher direction.

Center time is reserved for the last 20 or 30 minutes of the day as a reward to children who have finished their work. During this period these children may play with available materials:

1. They build with blocks.
2. They play with toy cars and trucks.
3. They dress dolls and engage in pretend play.

Lesson plans in Type A classrooms typically label this as "self-selected free play," and these are not considered educational activities. Limited materials offer children few choices. Inadequate resources in both materials and time

often result in an unfriendly and destructive competitive attitude among the children who vie for the opportunity to play with scarce materials.

The Teacher's Role. The teacher's relation to children is generally authoritarian in Type A classrooms. The teacher is the boss, makes all the rules, and expects children to be submissive. For example, in one lesson on *s*, when a child said "Ssss" when not asked to do so, the teacher said, "How many times do I have to tell you not to talk unless I tell you to?" After intense work on *s*, children were told to get out their pencils. This signal of a transition led them to stretch and whisper a bit. The teacher then began counting menacingly, "1, 2, 3, 4, 5," and immediate quiet ensued.

The teacher's involvement with the children during free play time is limited to monitoring children's behavior and disciplining children in conflicts by forcing them to leave their play and sit at their desks.

Commentary from a Constructivist Perspective. Several years ago, a teacher new to our constructivist program observed that the difference between what we were doing and what she saw in most classrooms was that we did not have free play. She commented that *free play* in early education meant that the teacher is free from teaching responsibility while children are free from adult interference to do what they want. Wien (1995) found such teachers in her study who understood developmentally appropriate practice to mean that child choice belongs only to free play, reflecting a view of practice as "deeply split into two compartments or conflicting spheres held in tandem as separate frameworks for conducting practice" (p. 106). The teachers in Type A classrooms seem to take this view. They view play and academics as two entirely different sorts of activities and see no role for themselves in children's play. Play is barely acknowledged as having any place in school, and is considered useful only to give children a break from work and to motivate them to get work done. It is notable that the centers in this type of classroom are usually crowded against the walls in the least space possible, with most classroom space taken up by individual desks and chairs. Play is truly peripheral in Type A classrooms—literally and figuratively.

While children may have some choice of activities during free play in Type A classrooms, they do not have enough time to develop and pursue in depth the complex problems that can arise when children go beyond superficial use of materials into enriched exploration and experimentation. Such investigations are not facilitated by the Type A teacher who provides no materials that lend themselves to experimentation and who takes no interest in what the children are doing unless conflict or misbehavior occurs. Teacher

Type A's understanding of the teacher's role in children's play is that a responsible teacher must monitor and control children's behavior.

Unfortunately, too many teachers (or their administrators), especially in early primary grades, believe that a period of free play after academic work is an acceptable compromise between academics and developmentally appropriate practice. Such a compromise distorts the idea of play-oriented developmentally appropriate education.

The problem with play and work in Type A classrooms is not so much a problem with objectives as with how to promote the objectives. Constructivist teachers take many of the same aims but approach them in different ways. For example, to learn about coin values, children in a Type D classroom might play a Piggy Bank card game (see Kamii, 2000, pp. 180–181; Kamii & DeVries, 1980, p. 55) in which children use cards with pictures of one, two, three, four, or five pennies, or a nickel to figure out which combinations make 5 cents. In this game, children do a lot more reasoning and spend much more time actively thinking about coin values than in teacher-directed drills. Math games and discussion of math problems arising from everyday life are more powerful ways of teaching number and arithmetic than drills and worksheets (see Kamii, 1982, 1989, 1994, 2000). Color names are more easily learned in the context of conversation during art and other activities where children are more personally invested in working with colors. Letter sounds are more solidly learned as children listen to books and discuss the words in the stories as well as names of children in the class.

In addition, considerable research has shown that when children are rewarded for doing something, they devalue it and lose any interest they might have had in it (see review in Kohn, 1993). The use of play as a reward for completing academic work thus defeats a teacher's (or parent's) hope of motivating children to learn academics.

From a constructivist perspective, a major shortcoming of Type A classrooms is that children do not have adequate opportunities to interact with each other or to engage their reasoning in activities in which they want to figure out how to do something. We do not see a community where children engage with others to pursue meaningful purposes. The children are clearly acting in terms of the teacher's interests, not their own. Coercion keeps children at what Dewey (1913/1975) might call "uneducative and miseducative" tasks that "deaden and stupify" (p. 55).

Classroom Type B: Play Is Disguised Academic Exercises

In Classroom Type B, children also work on academics, but these are disguised by the use of colorful materials intended to appeal to children's inter-

ests. Instead of using worksheets, the teacher offers workbook content in a format that allows children to be more active. This format is more appropriate for young children than the academics in Classroom Type A. However, while the teacher thinks of these activities as play, children do not share this view.

Materials and Activities. Children in Type B kindergarten classrooms may spend some time in large group activities such as listening to stories and watching informational videos on topics such as farm animals (also found in classroom Types C and D). In contrast to center time in Type A classrooms, their center time activities are integrated with academic goals. Children typically do not have free choice but are assigned and follow some kind of daily or weekly rotation through the following types of centers:

CLASSIFICATION/MATH

- They match paper cutouts of flowers and flowerpots by putting together those of the same color.
- They count the number of watermelon seeds drawn on one watermelon-shaped card to match the numeral on another watermelon-shaped card.
- They put cutout, numbered bees in numerical order.
- They make graphs of the numbers of pink, yellow, and blue cutout flowers placed on a table by the teacher.

LITERACY

- They match the halves of paper butterflies, one half with an uppercase letter and the other with its lowercase equivalent.
- They cut out the four sections of a sheet of paper with schematic drawings of a story and put them in an arbitrary, predetermined order.

FINE MOTOR SKILLS/ART

- They cut out petals outlined by the teacher on construction paper for precut flower stems.
- They glue tufts of tissue paper flowers on precut, construction paper trees.
- They paint at an easel where the teacher has outlined on the paper a large butterfly shape.

Children are allowed to use the woodworking, colored rice, manipulatives, puppet theater, or housekeeping centers only in the beginning of the year when the teacher feels children need a transition into work.

The Teacher's Role. The teacher intervenes little except to instruct children on how to do the activities and usually remains rather disengaged. She or he mainly observes as children obediently do assigned tasks, and checks their work from time to time to correct errors. After about 30 minutes, the teacher sings a clean-up song, and children put materials away in order to go to a "special" class (physical education, music, art, or library) outside the classroom.

Commentary from a Constructivist Perspective. Teacher Type B, like Teacher Type A, places priority on academics as the goal. However, in an attempt to introduce an element of play, the teacher sugarcoats academic exercises with cute materials presumed to appeal to children. The problem with Type B activities is not with providing appealing materials—which teacher Types C and D also do. The problem is that the appeal is superficial when the materials disguise a basically uninteresting exercise. Such an activity does not inspire children's real interest in their own purposes. They are doing the activity only because the teacher wants them to. When focused on producing right answers and specified products in these tasks, children in Type B classrooms know that they are not playing. Often, such tasks unnecessarily make something dull out of content that children would in more authentic contexts find extremely interesting. Dewey (1913/1975) criticized efforts to "make things interesting" when he stated that "it reduces method in instruction to more or less external and artificial devices for dressing up the unrelated materials, so that they will get some hold on attention" (p. 23). Dewey argued for a more authentic approach in which the child sees the connection of new material to what the child already values.

In one instance in a Type B classroom, a teacher was perplexed when she reported, "Children complained that they didn't have anything to do!" The teacher seemed to be asking, "Weren't the children active? Weren't they engaged in hands-on activities? Hadn't I provided thematic centers as recommended by early childhood educators?" It seems that the thinly disguised work did not fool children into thinking that what they were doing was meaningful. From their point of view, it was not play. It is no wonder that the children in Classroom B feel they have nothing to do! What they mean is that they don't have anything they *want* to do. Csikszmentmihalyi (1975) comments on the striking phenomenon of children—and adults—who "complain that 'there is nothing to do' when they are surrounded by innumerable stimuli" (p. 204). He accounts for this in terms of deprivation of the kinds of activities that so capture complete absorption that the sense of time is lost.

In Type B classrooms, children are able to move around more than in Type A classrooms. However, they do not choose but are assigned to activities. Research by Apple and King (1977) shows that if the teacher requires

children to engage in an activity, children tend to think of it as work and undesirable, even when the content is something they would enjoy if freely chosen. Fein and Wiltz (in press; also Gupton & Cooney, 1997) point out that it is important to consider children's perceptions of whether an activity is play or not. As noted by Jackson (1968), King (1979), and Wing (1995), children are not fooled by work presented by teachers as play.

"Play" in Classroom Type B is mainly a combination of trivial arts and crafts and thinly disguised work (or rather, as Dewey would probably say, "labor") that requires little thought. Especially in light of the fact that children are required to do them, these would be better characterized as "tasks" that children do to oblige the adult rather than "activities" that children do out of their own interests and purposes. Cutting out petals for the flower stem is "busy work" in the sense that no challenge is involved and no apparent use is to be made of these materials later. While gluing tissue paper requires a certain technique of twisting the eraser end of a pencil to create tufts, this also seems to present no challenge. Sequencing the drawings is arbitrary when the "correct" sequence is not the only one a child might imagine. The matching (colors and letters) and counting and ordering (numerals) tasks might be termed "tests" in the sense that the teacher wants to know if the child knows the answers. Or perhaps the teacher thinks of these as "practice." However, in these tasks one cannot practice what one does not already know, and if one knows it, practice is not necessary. How much more effective it is, for example, to teach number by engaging children in a game of High Card (commonly known as War; Kamii, 2000, p. 154) in which they not only think about numerical seriation but reason to compare the relative values of numbers. Art, story reading, personal writing, and group games provide more effective contexts in which children may construct knowledge of colors, number, and written language.

The value of graphing cutout flowers in the Type B classroom is attenuated by the teacher's arbitrary decision about what children are to graph and by the lack of genuine need or purpose for the graphs. How much more effective it is in a Type D kindergarten where children create a graph of magnetic name cards every morning to indicate lunch choices. The useful result is the daily attendance and lunch count.

In Classroom Type B, children are fed mainly a diet of trivia and busy work that neither appeals to their personal interests and purposes nor challenges them to figure out how to do something. "Stultifying tasks" might also describe many of children's activities in this classroom. They have little more opportunity than do children in Type A classrooms to interact with other children or to engage in meaningful, purposeful activities that promote reasoning. While coercion may be more masked than in classroom Type A, children still feel its presence and experience little autonomy.

CLASSROOM TYPES C AND D: EMPHASIS ON DEVELOPMENT

In contrast to the focus on academics in Classroom Types A and B, Classroom Types C and D share the goal of development. These have their roots in the early history of American early education (what I call the "child development tradition") when the fundamental concern was to facilitate the play and social interaction of the child in a way that would promote ego strength or positive mental health. Curriculum stressed self-selected, self-directed activities in centers of interest (such as housekeeping, blocks, sand, water, art, books, puzzles, science, and woodworking). According to Spodek (1977), the teacher's role up until the early 1960s was noninterventionist:

> The noninterventionist view held that the teacher's role was to provide a stimulating, attractive environment in which young children could play. The teacher would then step aside and let children play without adult interference. The teacher was supposed to support development, not intervene in the processes. (p. 7)

Concerns with promoting the school success of disadvantaged children in the 1960s and 1970s led to a new stress on cognitive and linguistic competencies. However, when trying to facilitate children's learning and intellectual development, child development teachers often reflected behaviorist theory and practices without realizing this contradiction with their emotional and social theory and practices. An appreciation of Jean Piaget's research and developmental theory led to efforts to change the child development approach, especially in its cognitive aspects, in order to bring it more in line with this new perspective.

Classroom Type C: Play Is Integrated with Social and Emotional Developmental Goals

In Type C classrooms, teachers view play as mainly intended for social and emotional development, and work is deemphasized if included at all. What is described here for Classroom Type C is a watered-down version of a child development approach. Play in these classrooms fits the general image of what a developmentally appropriate classroom should look like. Many early childhood teachers have progressed to this level in their ability to foster children's development through play.

Materials and Activities. Children in Type C kindergarten classrooms can choose to play alone or together and move freely among the following kinds of center activities:

SENSORY EXPERIENCES

- They pat and roll pink playdough.
- They smell small jars containing pieces of lemon, onion, and other things, to learn that the nose is to smell with.
- Using funnels, they pour water into different containers, then empty them; then wash dolls.

LITERACY

- They look at books in the library area.
- They listen to stories read by the teacher or on audiotape, write or draw stories, and dictate stories to an adult.
- They write however they wish at the writing table.

CONSTRUCTION

- They build structures with blocks.
- They build with Legos.

PRETEND PLAY

- They wear dress-up clothes and pretend to cook and eat dinner and feed the baby in the housekeeping center.

ART

- They paint at the easel.

COOKING

- They help the teacher make muffins by pouring ingredients as the teacher directs. Each child who is observing gets a chance to stir. They help to fill the muffin cups and go with the teacher to put them in the oven.

CLASSIFICATION

- They sort plastic bears by color.

SCIENCE

- They watch steam from a kettle, to learn that water evaporates into the air.

- They watch as the flame of a candle is extinguished when a glass is placed over the candle, to learn that fire needs air to burn.

Like children in Classroom Types A and B, children leave the classroom to go to "special" classes for physical education, library, art, and computers.

The Teacher's Role. Teachers in Type C classrooms vary widely on the degree to which they take a controlling role in relation to children. Many are warm and nurturing, but many are sometimes arbitrarily controlling (and thus at least mildly authoritarian). They provide many of the types of activities recommended as developmentally appropriate, but the teacher's role at center time is limited to that of observer, director, materials manager, and order keeper. Frequently, teachers more or less leave children to play by themselves until a problem arises. Except for the occasional reprimand, Teacher Type C is usually relaxed and pleasant with children, although in some Type C classrooms the teacher may sometimes be emotionally disengaged. The teacher spends center time observing, directing the cooking activity, and reminding children to put materials away when they are finished. Posted rules are made by the teacher and given to children. When conflict over the use of objects occurs, a typical response is, "If you can't share nicely, I'll put it up and nobody can play with it." Children are exhorted to share.

Commentary from a Constructivist Perspective. Children in Type C classrooms undoubtedly gain a great deal from many of their activities. In fact, Teacher Type C has moved far beyond Types A and B in providing developmentally appropriate activities for children. An approach emphasizing social and emotional aspects of play may be a necessary step on the way to implementing play in more comprehensive ways. Yet many Type C teachers often hear people criticize their programs as "just play." How can Type C teachers improve the value of play and integrate work in their programs? Our purpose in this book is to show how educators can improve the value of these classroom activities and, by doing so, address the concerns of critics who see little value in the play they observe in Type C classrooms.

Whether an activity is Type C or Type D depends on the ways in which children are able to engage in it. In assessing the value of an activity for children's development and learning, the teacher must consider the developmental levels of children. Some of the activities (such as playdough) described in Classroom Type C are high in value for 2-, 3-, and even some 4-year-olds but are not sufficiently challenging to hold the interest of older or more advanced children. Some activities (such as pretend play, blocks, writing, and book reading) are appropriate and beneficial for both younger and older children because the materials lend themselves to use at a range of develop-

mental levels. No matter what else children experience in a classroom, these activities, given adequate time, are rich in developmental possibilities that are not limited to social and emotional benefits.

While the activities in Type C classrooms do promote child choice and engage to some extent children's interests and purposes, many are below children's capabilities. They fail to challenge children to figure out solutions to new problems and develop new ways of thinking. Many of the activities underestimate what children could do with more challenging or complex materials and situations. For example, most 5-year-olds who have been in preschool are old hands at playdough, and it offers few new possibilities. Mixing playdough for younger children to use might confront children with the need to think about the relative effects of adding more flour and more water. However, this also may be too simple for older children unless they are given a recipe with pictures to "read" and are encouraged to experiment, perhaps even to develop their own recipes. Challenges may also be created by introducing many different modeling materials and implements. Children can work to create particular effects, experiment with different kinds of modeling substances, study sculptures made by artists, and collaborate with others on projects such as making a sculpture museum. Similarly, water play can be dramatically transformed into more challenging investigation and experimentation with the provision of materials and interventions that encourage children to figure out how to create new effects with water (see the description for Classroom Type D below).

Pretend play is valuable for children's construction of representations and their further development of symbolic thought and reasoning. It can be expanded and enriched by engaging children in deciding whether they want to change their house center to another pretend context—flower shop, restaurant, grocery store—then in preparing the materials they will need and discussing how to use them. Such pretend centers can provide opportunities for writing the names of flowers, prices, and menus, for calculating bills and using number to figure out how to make change with pretend money, and for organizing their respective roles; the children thus exercise and develop literacy, numeracy, representational ability, and symbolic thought.

Cooking can be turned over to children by providing recipe books illustrated to aid reading (see Kamii & DeVries, 1978/1993; Chapter 6 in this book), and by supporting children's autonomy and cooperation as they take turns and work together in pairs to make snacks for the class. This experience is far more educational than observing the teacher do most of the food preparation.

Sorting plastic bears is another example of disguised, purposeless work (except when a child invents the idea of sorting on his or her own). Many teachers think they are teaching classification through such sorting activities; however, this kind of sorting involves simple groupings of subclasses and does not require thinking about relations between superordinate and subordinate classes, the hallmark of classification. Piaget (Piaget & Szeminska, 1941/1952) defined classification as a system of inclusions and discussed the development of the logic of classification as hierarchical inclusion of subordinate classes in a superordinate class. For example, the class of "flowers" may be composed of "roses" and "tulips." If there are more roses than tulips, young children respond to the question, "Are there more flowers or more roses?" by saying there are more roses than flowers. This indicates the inability to think about the roses as both a separate class and a part of the class of flowers.

While most kindergarten children are not yet capable of hierarchical classification of subordinate classes into a superordinate class, they can profit from the use of materials in which hierarchies can be made. With this as the long-term goal, open-ended activities to promote thinking about class relations are much better than simple sorting for the sake of sorting. For example, card games such as Making Families and Go Fish (see Kamii, 2000, pp. 146–147; Kamii & DeVries, 1980, pp. 133–142) involve classificatory reasoning that young children can do even before they are capable of the class inclusion necessary for true classification. Children must think about making sets of two, three, or four cards that are alike in some way but not identical (for example, four sheep in each of four colors, or four different animals of the same color). In such games, children are motivated by their interest to think again and again about class membership by constructing similarities and differences in the course of playing the game. Such intellectual activity is more likely to promote the construction of class relations than simple sorting for the sake of sorting. As Piaget pointed out,

> The child can certainly be interested in seriating for the sake of seriating, and classifying for the sake of classifying, etc., when the occasion presents itself. However, on the whole it is when he has events or phenomena to explain or goals to reach in an intriguing situation that operations are the most exercised. (Piaget & Garcia, 1971/1974, p. 26)

The challenge for teachers is to figure out how to select events and phenomena that will intrigue children and lead to development of reasoning.

When subject matter content is included, Type C teachers sometimes take a behaviorist approach to teaching. For example, many Type C teachers believe that children learn by absorption through their senses and by association. In the activity where children smell different objects, the assumption is that children will associate the smell with the object. This type of classroom activity is not very helpful to older preschool and kindergarten children

because they already know how these objects smell. In this case, the content is too easy. Moreover, it is closed-ended and cannot go any further. In contrast, Type D constructivist teachers view sensory activities as guided and organized by the intelligence. That is, when the child actively reasons about sensory experiences, what is known comes from the organizing intelligence and not from perception alone (see Piaget, 1961/1969).

Other examples of a behaviorist approach to selecting science activities are found in the planned observations of a steaming kettle and the extinguishing of a candle. In these activities, children are expected to learn that water evaporates and that fire needs air (or oxygen) to burn. The problem with these activities is that children cannot observe the physical interactions causing these phenomena. Because they cannot understand these events, they can at best only parrot what the adult says. Most likely, the events will be regarded as incomprehensible "magic." These are examples of content that is impossible for young children to understand. From the constructivist perspective, trying to teach such subject matter not only fails to teach the content but also has a possible harmful effect: When children have to try to understand too much content that is beyond them, they may lose confidence in their abilities to learn or may "tune out" to school entirely.

Type C teachers generally underestimate children's capacity for reasoning in work and play. They seem to believe that it is enough to let children engage in activities that from a constructivist perspective fail to lead development and learning forward.

Classroom Type D: Play and Work Are Integrated with Social, Emotional, Moral, and Intellectual Development

Type D teachers represent the ideal constructivist teacher. They extend their developmental goals beyond social and emotional development to include a conscious focus on moral and intellectual development as well. Constructivist teachers expand the Type C notions about social and emotional development by conceptualizing the development of personality and the child's hierarchy of personal values as constructions the child elaborates in the course of everyday experiences (see DeVries, 1997; Piaget, 1954/1981, 1928–1964/1995). They include the specifically moral and intellectual development of children as important aims.

Materials and Activities. Type D constructivist teachers engage children in making rules to live by and some decisions about life in the classroom, ask what children want to learn about, center the curriculum around children's interests, and engage children in social and moral discussions of issues that

arise in the classroom as well as issues that are found in children's literature. Compare the classrooms described above with a Type D classroom in which kindergarten children engage in both work and play activities, as listed below, according to their free choice during center time. In addition to a number of activities found in Type C classrooms such as block building and play with other construction toys, reading books, and using standard art materials that are always available, they use the following types of centers:

Group Games

- They play the classification game *Guess Who?* in which they have to conceptualize and pose yes-no questions to a partner, eliminate possibilities, respond to the other's questions, and try to guess the identity of a mystery card (similar to the game Animal, Vegetable, Mineral).
- They play the Cover Up game (see Kamii, 2000, p. 173), in which players roll a die to determine how many of the squares to fill on their 12-square card.
- They play the card game Making Families to try to figure out what card to ask for in order to make sets.

Pretend Play

- They make a shoe store in the pretend play area and pretend to buy and sell shoes, write price signs and receipts, and answer the telephone.
- Using a wolf puppet and a red sweater for a hood, they cooperate to act out *Little Red Riding Hood* for other children in the library corner.

Physical Knowledge/Cooking/Art

- Two children negotiate how to follow a written and illustrated recipe to make something for the class snack.
- They experiment at the water table with a variety of transparent plastic glasses that have small, medium, and large holes drilled into sides and/or bottoms. The teacher provides a pegboard on a stand over the water table that is sitting on the floor (with its legs removed). Children can arrange cups in metal cup holders that hook into the pegboard, then observe the draining that occurs when they pour water into the cups (see Chapter 7 for pictures and further description).
- They work with strips of construction paper (plain, fringed, accordion-pleated, and so forth) to create three-dimensional sculptures on a base.

MATH/SPATIAL REASONING

- They work with pattern blocks and tangrams, using Cuisinaire's plastic shape frames (see Sales & Sales, 1994, 1995). Once a frame is filled, it can be lifted to leave the block design on the table, and then reused to create the same shape with different blocks (see Chapter 8 for detailed discussion).
- Individual children survey the others and make graphs on something the surveyor wants to know (such as what are the favorite TV programs of the class members).

LITERACY

- They write in personal journals at the writing table, writing (or pretending to write) stories which they illustrate, or making a list of things they did over the weekend, or dictating a story for the teacher to write down.

In all activities, children engage in conflict resolution with the teacher's help or by themselves. Many of the activities extend over several days or even weeks. Like Classroom Types A, B, and C, children in a Type D classroom also go to "special" classes that include physical education, art, library, and computers.

The Teacher's Role. The teacher not only observes but also engages with children in activities, wondering aloud and posing questions to promote reasoning (for example, "I wonder why the water stays in that cup [with side hole only]" or "Do you think you can get the water to flow from one to another and then another and another?"). Sometimes he or she takes part in a game as a player alongside children. As children work with the shape frames and pattern blocks, the teacher asks questions such as "Do you think you can make that shape with other colors?" and "Could you make it all yellow? Would that work?"

Conflicts occur, and the teacher intervenes to facilitate children's resolutions and self-regulation, emphasizing that the conflict is theirs and they must figure out what to do. He or she helps children listen to each other and makes sure all agree to a resolution (see DeVries & Zan, 1994, for other principles of teaching in conflict situations). For example, during a game of Cover Up played by two 4-year-old girls and the teacher, a problem arises with regard to the order of turns. Both girls think they are next, and there is a long impasse during which the teacher refrains from settling the problem and asks again and again what they can do to solve the problem, making it clear that responsibility for a solution belongs to the children. Finally, one girl suggests they each take a die and roll them at the same time! This is what

they do. Later, the teacher confided that she was astonished and pleased with their solution, one that would never have occurred to her, illustrating how children's solutions to their conflicts are often different and work better (because the children feel ownership of the solution) than what teachers might suggest. In another Type D classroom, a child complains that another called him a name. The teacher responds, "Have you told him how you feel about that? What can you say to him?" The child goes away to assert his feelings and, if not satisfied, returns to ask the teacher's help in communicating. In cases where many children want to do a new activity at the same time, the constructivist teacher introduces the idea of a sign-up list.

Recognizing that group games could, if too easy, fall into the category of mere entertainment, Teacher Type D selects games he or she expects to offer intellectual challenges, and observes to see whether, in fact, children's reasoning is challenged. If a game turns out to be too easy or too difficult, the teacher learns that it does not offer educational possibilities to children and either retires the game, modifies it, or encourages children to modify it.

The teacher promotes literacy development by integrating the need to read and write throughout many activities in print-rich classrooms. For example, each game has a set of written rules, and the teacher makes a "big deal" out of reading the rules to find out how to play the game. In the shoe store, children have opportunities to read and write. They read class rules as they illustrate them. Children have to "read" recipes in order to find out how to make snacks. Like Type C teachers, Teacher Type D reads stories aloud, encourages children to write or draw stories of their own, and takes down children's dictated stories, thus developing their appreciation for literature and writing. By having children reenact a story they know well, the teacher facilitates the consolidation of their knowledge of sequential temporal events and their knowledge of "story," an important component of literacy. The teacher encourages children to engage in a variety of writing activities so that children come to conceive of themselves as writers.

The Type D teacher promotes children's reasoning about number by providing materials involving number in group games and pretend play, and by conducting discussions of everyday issues involving number. For example, when children make the "logical error of addition" in a path game by counting as "one" the last space on which they landed on the previous move (rather than going forward on the count of "one"), the teacher provides a die with four 1s, a 2, and a 3 so that children will have many experiences of confronting the unsatisfying situation in which they count "one" and go nowhere! As they begin to have a feeling of logical contradiction in this situation, children often stumble and stutter in their count, saying, "one" (going nowhere) . . . "one" (hesitatingly moving the marker forward). At a certain point in their development, children feel something is wrong. Such a feeling of inter-

nal conflict is the beginning of a feeling of logical necessity that eventually leads to self-correction of this error. Other areas also involve reasoning about number. In making snack, for example, children must figure out how many crackers to spread if everyone is to get two. Or, if they had six balls when they went outdoors and only four when they are ready to come inside, the teacher encourages children to think how many they need to look for.

In physical-knowledge activities (see Kamii & DeVries, 1978/1993) such as water and cooking, the teacher provides opportunities for children to construct knowledge about the world of objects, making comments and asking questions to draw children's attention to its many spatial and causal problems in the hope that children will be inspired to find their own purposes as they pursue questions that interest them. In the water activity, the Type D teacher views the child not as just playing, but as making progress in constructing knowledge about the properties of water and its containers, even constructing greater intelligence with increased capability to reason. In cooking, the teacher encourages children to think about irreversible physical changes (such as what happens when flour is mixed with a liquid). They also learn about health-related issues such as the importance of cleanliness and food values. With pattern blocks and tangram frames, the teacher fosters children's construction of relations of equivalence by encouraging children to discover, for example, that two triangles can make a parallelogram.

Commentary from a Constructivist Perspective. In the course of trying to show how to transform the activities in Classroom Types A, B, and C, I have shared a lot of the Type D constructivist approach and perspective. The reader will therefore not be surprised to read that two characteristics emphasized in Type D classrooms are often missing in Type C (as well as Types A and B) classrooms. First is the conscious effort of Type D teachers to create a certain kind of sociomoral atmosphere (discussed in Chapter 2) in which the teacher respects children and takes their perspectives into account. Some—perhaps many—Type C classrooms are characterized by a positive interpersonal dynamic but do not reflect a conscious effort to cooperate with children and create a feeling of community. Second is the constructivist focused effort to facilitate children's intellectual development by microanalyzing children's thinking in activities and by providing materials and suggestions that lead children into play and work with more complex materials and situations.

Let us consider in more detail the rationales for activities provided in Type D classrooms. In *Guess Who?* and Making Families games, children have the opportunity to use classificatory reasoning to think about classes and their relations. In Making Families, the problem is a matter of thinking of the superordinate category of sheep with its subordinate subclasses of colors. The child has to think of one subclass (such as the red sheep) that is

missing from his or her hand (and thus not observable at that moment). In *Guess Who?* the problem is even more complicated and challenging for 4- and 5-year-olds because of the difficulty of turning affirmations into negations. Piaget (1974/1980) showed that negations are especially difficult. For example, if the partner says yes to the question "Does your person wear glasses?" it is necessary to turn the affirmation into a negation and think, "I have to push this face down because this one does *not* wear glasses," and to perform the action of negating or eliminating the faces *without* glasses. A common error is for the child to hear "yes" and turn down all the faces wearing glasses, a failure to think of the opposite of wearing glasses. In this game, children are motivated to use more mobile thinking in order to master this "mind twister."

The less challenging game of Cover Up offers no opportunity for strategy, but children who have had little experience with games can become committed to the reciprocity of turn taking and think about number. Continued assessment of one's standing in the game can involve thinking about the number of spaces yet to be filled, comparing the number filled on one's own card with that of the opponent, and thinking what would be the ideal number to roll on the next turn.

Art frequently provides opportunities to construct knowledge about the properties of objects as well as opportunities for reasoning. For example, creating paper sculptures presents children with the problem of how best to attach the end of a paper strip firmly to the base (with paste, glue, staples) and with the spatial problems in arranging strips in relation to each other. In the case of illustrating the pages in their class rule book, children have the opportunity to take further their ownership of the rules they made to regulate their relationships in the classroom, thus promoting moral development of a system of values.

Making graphs involves solving the logico-mathematical problem of the unit of measurement (for example, using a cube or inch-square on a paper to represent each child) and offers children the opportunity to take a scientific approach to finding answers to their own questions.

All these self-chosen activities offer children in Type D constructivist classrooms the opportunity to exercise autonomy as they pursue their interests, create their own purposes, and pursue intriguing questions raised by themselves or the teacher, as well as the opportunity to exercise reasoning to figure out how to accomplish various personal goals. In all interactions with children the Type D teacher shows respect to them and cooperates with them, minimizing the exercise of unnecessary coercion (for discussion of how the teacher accomplishes this, see DeVries & Zan, 1994; Chapter 2 in this book).

The constructivist Type D teacher also includes academic goals in planning activities, but these are embedded in the context of play and work in

which children find personal interest and value. Play merges into work as children develop a seriousness of purpose and desire to create high-quality work characteristic of older children and adults whom they admire.

CONCLUSION

The National Association for the Education of Young Children has taken a courageous stand in support of developmentally appropriate practice as the standard in early education from birth through third grade. The NAEYC position statements advocating a play-oriented approach have had enormous influence, especially in communicating the inappropriateness of "teacher-directed instruction in narrowly defined academic skills" (Bredekamp, 1987, p. iv). NAEYC's descriptions of appropriate practices have gone a long way toward creating an attitude of acceptance of these practices among preschool and elementary administrators and teachers. Unfortunately, however, research on teachers' implementation of DAP (for example, Cole, 1996) reveals a lack of consensus about its practical implementation. This may be due, in part, to the fact that while the position statements attempt to give examples of DAP, they are limited in their description of specific practices. Thus the reader is left to interpret (and misinterpret) how general ideas are reflected in practices.

My descriptions of how play-oriented curriculum is actually implemented in four classrooms dramatize the vastly different experiences offered to children under the DAP flag. In Classroom Type A, play is viewed as peripheral to learning and academic work, and Type A teachers seem to believe that a short period of free play after a day of academic work is an acceptable compromise between academics and DAP. In Classroom Type B, what is called play is really academic exercises disguised with colorful materials, and what is really trivial busy work is thought to be a way of meeting DAP guidelines. In contrast to Classroom Types A and B where academics are the goals, Classroom Types C and D take development as their goal. The Type C classroom offers what is usually thought of as DAP, a program where social and emotional goals are integrated in center-based play that is a mixture of activities rich in developmental possibilities and activities with little intellectual challenge. Type D constructivist classrooms go beyond Type C classrooms by adding challenging intellectual and moral goals in both play and work.

It is important to recognize that developmentally appropriate practice is being misunderstood by some educators to include the notions of play as peripheral to learning and as disguised work. It is more difficult and, in my view, more crucial to recognize that developmentally appropriate and constructivist education are being misunderstood by many educators to be

what Piaget (1948/1973b) called "generalized play without much educational benefit" (pp. 6–7). Many of the current definitions of play, such as intrinsic motivation and freely chosen activity, distinguish the differences between Classroom Type B, on the one hand, and Classroom Types C and D, on the other. However, these definitions do not distinguish between Classroom Types C and D.

To identify an activity as "play" does not automatically mean that it is constructive or educational. Play can be at a low level, without much value (for example, when children play a game that is too easy and holds no new intellectual or social challenges). "Constructive" or "transformational" play is justified by the contribution it makes to some aspect of the child's development and learning. While constructive or transformational play can occur without the teacher, the teacher can enhance the value of an activity through insightful interventions that extend children's interest, exploration, and experimentation by helping children see new possibilities in what they are doing. To know whether an experience is educational, we must assess the child's purpose, interest, and engagement; the worthwhileness of the content; and the value for the child's development and learning.

The examples of activities in Type D classrooms provide a glimpse of what teachers do in constructivist classrooms. In Chapter 2, constructivist education is defined in more detail, with principles of teaching and examples.