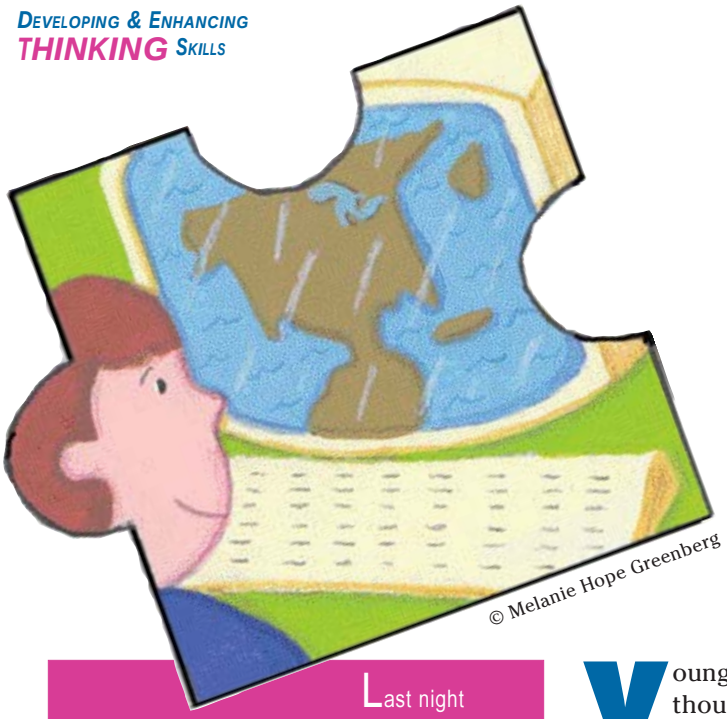

How Planning and Reflection Develop Young Children's Thinking Skills

Ann S. Epstein

> Last night Tatiana, age four, was telling us [her parents] her plan for the evening as we were eating dinner. She told us she planned to watch her new video, play her memory game with her mom, give her baby doll a bath, and have me read her some books. When I asked her when she was going to brush her teeth and go to bed, she told me that wasn't part of her plan!

> Today after choice time, three-year-old Eric told me [his teacher] he had watched Goober, the hamster. He reported that at first Goober was asleep, then he woke up and started drinking his water and eating his food. I said Goober must have been hungry. Eric agreed, then added that Goober wanted to get out of his cage "'cause he kept looking at the roof and standing up." Eric further observed, "I think he's lonely. You need to get another hamster to keep him company."

Vignettes above adapted, by permission, from N. Vogel, *Making the Most of Plan-Do-Review: The Teacher's Idea Book #5* (Ypsilanti, MI: High/Scope, 2001), 11 & 141.

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Young children ages three to six are capable of making thoughtful decisions about their behavior and keen observations about their environment (as the vignettes at left show). Like Tatiana and Eric, they have insight into their desires, form mental images of the past and future, and attempt to explain their behavior and that of others.

Although today's early childhood educators often focus on enhancing reading and mathematics skills to meet ever increasing academic expectations, we must also remain committed to promoting broader thinking abilities. They are the foundation upon which children learn to make decisions, regulate their own behavior, meet complex challenges, and take responsibility for their actions.

Eager to Learn: Educating Our Preschoolers, the noted National Research Council report (2000), reminds us that "key concepts involved in each domain of preschool learning must go hand in hand with information and skill acquisition" (p. 8). It cites research showing that metacognition—higher-level thinking and problem-solving skills—develops when children are encouraged to reflect, predict, question, and hypothesize. How can adults help children exercise these capabilities?

There is empirical and practical evidence that we can promote the development of thinking and reasoning in young children in the early years by providing two curriculum components—*planning* and *reflection*. Both are thoughtful activities that encourage children to consider what they are doing and what they are learning. They also promote a broad range of other academic, social, and artistic competencies. This article summarizes the research in support of these claims and offers strategies teachers and caregivers can use to encourage planning and reflection in their programs.

Definitions

Both the accreditation criteria of the National Association for the Education of Young Children (NAEYC 1998) and the Head Start Performance Standards (U.S. Department of Health and Human Services 2002) indicate that young children should have opportuni-

ties to plan and make choices. However, the guidelines, and in fact most early childhood programs, do not differentiate between these two activities. Planning is more than making choices. Planning is *choice with intention.* That is, the chooser begins with a specific goal or purpose in mind that results in the choice.

First we must differentiate real choices in which teachers offer multiple options ("What colors do you want to use in your painting?") from pseudochoices in which teachers direct children to a limited number of adult-selected options ("Do you want to use red or blue?") But planning goes further than selecting from open-ended choices. When we engage children in planning, we encourage them to identify their goals and consider the options for achieving them. For example, they might consider what they will do, where they will do it, what materials they will use, who they will do it with, how long it will take, and whether they will need help. Planning thus involves deciding on actions and predicting interactions, recognizing problems and proposing solutions, and anticipating consequences and reactions.

Most early childhood practitioners also recognize the importance of developing memory skills in young children. Teachers might ask children to remember something they learned earlier in the day or to recall an event that occurred earlier in the week. Reflection, however, is more than memory or a rote recitation of completed activities. Reflection is *remembering with analysis.*

When we engage children in reflection, we encourage them to go beyond merely reporting what they've done. We also help them become aware of what they learned in the process, what was interesting, how they feel about it, and what they can do to build on or extend the experience. Reflection consolidates knowledge so it can be generalized to other situations, thereby leading to further prediction and evaluation. Thus planning and reflection, when they bracket active learning, are part of an ongoing cycle of deeper thought and thoughtful application.

Supporting research

Evidence establishing the importance of planning and reflection comes from studies conducted by the High/Scope Educational Research Foundation and other researchers. In one large national study, trained independent observers collected data on early childhood programs serving children from a wide range of socioeconomic, ethnic, linguistic, and geographic backgrounds (Epstein 1993). (The programs used many different curriculum approaches, not just the High/Scope plan-do-review sequence.)

Across all settings, children who were given more opportunities to plan and reflect on their own activities scored higher on measures of language, literacy,

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social skills, and overall development. Independent investigations in the United Kingdom (Sylva 1992) and the Netherlands (Veen, Roeleveld, & Leseman 2000) confirmed that when children plan, carry out, and review their own learning activities, their behavior is more purposeful and they perform better on language and other intellectual measures.

Using words to plan and reflect are examples of language that is *decontextualized* (focused on nonimmediate events), which in turn is related to later reading success (Dickinson & Smith 1994). As they help children elaborate on their plans and think back on their activities, adults add complexity to the children's language, providing adjectives, adverbs, and new or rare words. This richness of vocabulary is also a critical component of subsequent literacy development (Snow et al. 2001).

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Further, making predictions (planning) and assessing outcomes (reflection) lie at the heart of mathematical and scientific thinking. These processes are central to meeting the early childhood standards of the National Council of Teachers of Mathematics (2000). Planning and reflection also play a role in social problem solving. For example, effective strategies for conflict resolution encourage children to reflect on their feelings, plan alternative solutions and predict the consequences, and assess the efficacy of their ideas (Evans 2002).

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Finally, studies of discipline-based art education (which emphasizes the intellectual as well as the expressive components of the arts) demonstrate the importance of these thoughtful processes as children not only make art, but also develop an appreciation for the artwork created by others (Arts Education Partnership 1998). In all these ways, the development of higher order thinking skills in young children can prepare them to master skills across multiple content areas.

Developmental notes

Before applying the strategies that follow, bear in mind that the ability to plan and reflect develops gradually and with practice during the early childhood years. Here are two general principles that will help you apply these strategies to children ranging in age from three to six years.

- **As they grow older, children are increasingly able to form mental images that allow them to anticipate and remember objects, people, and events that are not there.** Children younger than three understand the world on a concrete, physical level. They may need to look at materials to devise a plan or reimmerse themselves in a setting to recall what happened. Older children, with greater language and cognitive abilities, begin to function at a more conceptual level. They can rely on verbal and visual representations, including abstract images and printed words, to think through, carry out, and reflect on their ideas.
- **Planning and reflection become increasingly detailed as children age.** Younger children devise simple plans and focus on one or two salient objects or events as they ponder their experiences. They express intentions or reactions with gestures and limited vocabularies. Older children develop multipart sequenced plans and enrich their recollections with layered explanations and hypotheses. As they plan and reflect on a daily basis, they develop the linguistic and conceptual structures that allow them to formulate and share complex thoughts.

Observe the children in your program and note where they are along these developmental continua. As you generate a collection of anecdotes, you will gain an understanding of how children's thinking develops in these intertwined areas. By adding your own observations to the examples presented on the following pages, you will be able to support and extend children's emergent thinking skills.

For more information on developmental progressions and strategies in planning and reflection with young children, see Hohmann and Weikart (2002) and Vogel (2001).

Strategies to promote children's planning

Here are some strategies teachers and caregivers can use to encourage children to think about their intentions as they indicate choices and make plans throughout the day.

Children benefit from planning in small groups because the thoughts and elaborations of others often spark their own ideas.

1. Make planning a regular part of the program day. Planning should be a regular classroom activity so children will automatically begin to think in terms of what they want to do and how to carry it out. Do it at the same time(s) each day, for example, after morning greeting, during breakfast, or following nap. You can plan with children in small groups or pairs, as well as individually, making sure each child gets to express his or her intentions. In fact, children benefit from planning in small groups because the thoughts and elaborations of others often spark their own ideas. In the following example, Meredith, the teacher, is planning around a table with a group of four- and five-year-olds.

Jason: I'm going to make a racetrack in the block area.

Meredith: You made a racetrack yesterday that stretched all the way to the bookshelf.

Mike: Me and him made it together. Today we're gonna make a longer one.

Meredith: It sounds like Jason and Mike are planning to work together today. [The boys go to the block area.]

Darya: I'm going to work together too.

Meredith: Who are you planning to work with?

Darya: With Mei Lin.

Mei Lin: Let's fill all the jars with water and make them sing.

Darya: First let's make the water orange. I'll mix the paint while you get the jars.

Meredith: Let me know when the jars are ready to sing. I want to hear them. [The girls head for the art area and water table, respectively. Meredith continues to plan with the rest of the group.]

Children should begin implementing their plans immediately or soon after they make them. Allow enough time—10 or 15 minutes total should be sufficient to give everyone in the group a chance—and don't rush children when they plan. If they are struggling for words or ideas, wait and listen patiently. Let them know their intentions are as important to you as they are to them.

2. Make sure children can see the areas and materials in the room when they are planning. Visibility is important for younger planners whose mental representations are limited. Even older planners cannot keep in mind all the possibilities of a well-stocked room. Tour the room before or during planning

and point out new materials or things the children have not used for a while. Avoid high shelves or other barriers that block a full view.

Being able to see everything not only enhances planning, it also means children will incorporate a wider variety of materials into their ongoing play. When they encounter a problem carrying out their plans, they will also have a better idea of the alternatives available to help them solve it. Knowing what is in the room also minimizes the chance that children will plan activities they cannot carry out with existing materials. If they do, however, this presents an opportunity for you to say something like, "We don't have any arm casts. What could you use instead to wrap your doll's broken elbow?"

3. Ask children questions. It isn't sensible to ask adults questions to which you already know the answers. The same applies to conversations with children. Ask them open-ended questions to seek genuine information about their intentions and how they plan to carry them out. "How will you build your tower?" will elicit more detail than "Will you use the big blocks?"

4. Listen attentively to children's plans. Share conversations with children, don't direct them. By paying attention to their words and gestures, you will learn about their ability to anticipate and think about the details of their plans. Then you can choose the most appropriate support strategies to help them elaborate their ideas and consider the options for implementing them.

5. Support, accept, and extend all the ways children express their plans. Never force children to express their plans in a certain way. If they gesture (for example, bring you a book), don't insist they verbalize their idea before being allowed to proceed. Accept the gestured plan, but reflect it back in words to make sure you've understood the intention and to supply the vocabulary they can use when they are ready ("You want me to read you this book, *The Snowy Day*.")

Don't negate a plan or offer children an alternative to their plans. This defeats the whole purpose of encouraging them to express their own intentions. Avoid the temptation to say, "You've gone to the house area every day this week. How about painting in the art area for a change?" Instead, observe what interests the child in the house area and think of ways to extend it: "You took Tamika's order for lunch yesterday. You might want to use these menus that I brought from the diner."

Questions about what a child did should be asked sparingly and only to obtain information that is not trivial or already known.

6. Encourage children to elaborate on their plans. Children at all stages of planning can be helped to extend their ideas. For beginners, try simple follow-up questions:"What will you need to do that?" Comments about what children are doing may elicit more details than questions. When his teacher observed, "You're barking like a dog," Mitch replied, "I'm a lost dog and I want you to find me."

In your eagerness to assist younger children, don't overlook opportunities to scaffold older students' learning. Encourage them to give details about where they will work, the materials they intend to use, the sequence of their activities, and the outcomes they expect to achieve. For example, when Rachel announced she was going to draw the family dog, her teacher said, "I wonder how you're going to show the puppies growing inside Daisy's tummy." This encouraged Rachel to consider such issues as size and spatial relationships as she planned her drawing.

7. Write down children's plans. If you record their plans, children get the message that their ideas are valuable. For example, you might label a drawing a child has made or the tracing of objects he or she intends to use. Take dictation when children describe what they will do and how they will go about it. Write the child's name on the plan. With older children, encourage them to begin writing down their names and ideas themselves. Documentation—including writing, drawing, and photography—helps children become more conscious of the process and value of planning. They are more likely to think through and elaborate on their ideas as they formally record them. Children can also review their documented plans as they reflect on their experiences and compare their intentions with the actual outcomes.

8. Use encouragement rather than praise. Another way to support planning is to avoid praising children's ideas. If you say "great idea" on one day or to one child, you may inadvertently convey disapproval if you forget to say those words to another child or on the following day. Praise also tends to end the conversation, cutting off the possibilities for children to elaborate their plans. Instead, use the other strategies listed here—listening, asking questions, commenting, recording their ideas—to encourage children to think about and follow through on their intentions.

Strategies to promote reflection

Many of the strategies that support planning also apply to promoting reflection. Remember too that planning and reflection are iterative processes. Encouraging children to think about what they did enables them to use this information as they plan what they will do next.

1. Make reflection an ongoing part of the program day. It is valuable to have a set time each day when children gather in a small group to share what they have done. For example, this can occur immediately after free play or center time, during snack, or before going outside. Schedule a period for reflection soon after children have completed their planned activities. In addition to these set times, however, reflection can and should happen whenever children are actively engaged in learning. Using the other strategies listed here, you can encourage children to ponder the what and why of their actions with a temporal immediacy that makes reflection especially relevant and meaningful to them.

2. Ask open-ended questions. As with planning, questions about what a child did should be asked sparingly and only to obtain information that is not trivial or already known. Open-ended queries such as "What happened when you added the third block?" will invite more observation on the part of the child than something obvious like "Did you add another block?" Questions that begin with "How did you . . . ?" or "Why do you think . . . ?" also encourage children to reconstruct and create meaning from their experiences.

3. Interpret and expand what children do and say. Nonverbal children, or those with limited language, may gesture or present materials to indicate what they did. You can add words to their actions, checking with them for cues to verify you understand their message. Your explanations will provide them with vocabulary for future reflection. Here, for example, John, a teacher, attaches sentences to the physical reenactment and simple words of Naomi, an older toddler:

John: What did you do at free play today, Naomi?

Naomi: [Points to block area.]

John: I saw you and Latoya playing in the block area.

Naomi: [Lifts her hands high.]

John: You built a high tower.

Naomi: [Bangs her hands down on the table.]

John: Did the tower fall down? [Naomi nods.] I wonder why that happened.

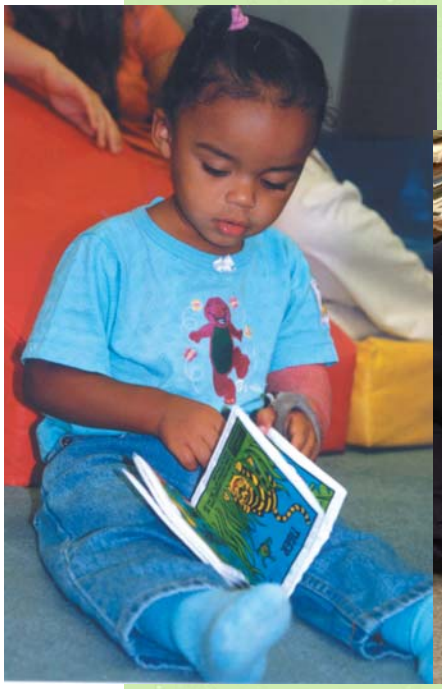
Naomi: More block.

John: You put another block on the tower?

Naomi: All fall down.

John: You put a big block on top, but it was too heavy so the tower fell down.

With children who are already verbal, use body language and conversation to show you are listening.



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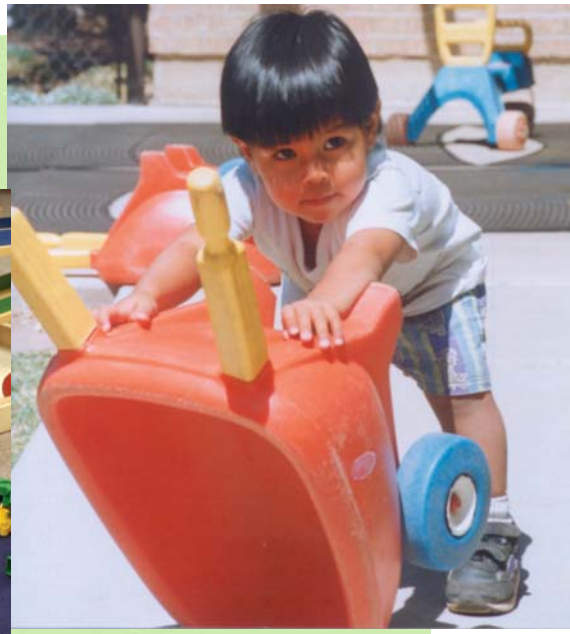

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Introduce new vocabulary words. Ask them to re-create an event or imitate their actions so you can observe and discuss the experience together. For example:

Teacher: [Sits next to child who is painting.] How did you make these swirly marks?

Child: I dipped my fingers in the paint and rubbed 'em all around. It's a tornado and it blowed down this house.

Teacher: [Bends to look.] That sure was a gigantic tornado. It blew down the whole house. What's this spot right here? It has a rougher texture.

Child: It's where the kitty scratched to get out of the house. It was scared.

Teacher: A tornado is very scary! How did you make that scratchy mark?

Child: I went like this. [Demonstrates with fingernail.]

Teacher: You drew a line with your fingernail in the paint. [Takes a piece of paper and imitates child's action.] Did you get paint underneath your fingernail too? [They compare nails.]

4. Accept conflicting viewpoints and interpretations. Children's recollections and explanations sometimes differ from one another or from those of adults. It is important to acknowledge and accept each child's version, not to correct them or take sides. The point of reflection is not to arrive at some absolute truth but rather to encourage children to think about what happened and why. Even if the conversation goes far afield or heats up, it is important to find ways to support the thinking processes going on. In the following example, the adult acknowledges each child's observations about what animals like to eat:

Caregiver: [Whispers.] Bethany played with the [stuffed] animals and put them all to sleep.

Bethany: And I gave them peaches. [Pretends to feed a cat.]

Joey: Cats don't like peaches. They like cat food.

Bethany: Peaches!

Erika: My dog likes bananas.

Joey: That's dumb. Dogs aren't supposed to eat bananas. They like bones.

Margo: My dog likes chicken bones, but my mom says he'll choke. He coughs up hair, like this. [Demonstrates.]

Joey: Yech! That's gross.

Caregiver: Some cats like peaches, some like cat food. Some dogs like bananas, some like bones.

Margo: And chicken bones.

Caregiver: And chicken bones. Some cats like chicken bones.

Bethany: Peaches.

Joey: Oh brother!

Recording children's remarks as they reflect on their activities tells them their thoughts are worth preserving.

5. Comment on what you see children doing as they play. Making comments while children are engaged in an activity serves two purposes. It encourages them to attend to and evaluate the experience as it is happening, and makes it easier for them to recall the event later. The more specific the comment, the more likely the child will remember and add his or her own details. For example, when Yusef's caregiver said "I saw you in the writing area using the markers," Yusef elaborated, "I invited Carlos to my party. Now there are five children and I'm five years old."

6. Write down what children say. Recording children's remarks as they reflect on their activities tells them their thoughts are worth preserving. You can label their drawings or take dictation as they dramatize something that happened. For older children, encourage them to write letters and words that capture their experiences and what they learned and thought while engaging in them. Written accounts—as well as drawings, photographs, and other forms of documentation—are also something concrete you and the children can share with their families.

7. Help children connect their plans and activities with their reflections. Having children recall their intentions in light of their actual behavior helps them establish causal relationships and a sense of efficacy and responsibility regarding their actions. You might say, "I remember you planned to make a superhero cape. Is that what you did?" The goal is not to hold children accountable for carrying out their plans—changing plans is perfectly acceptable—but rather to have them think about how and why their actions did, or did not, follow their intentions.

If children do change plans, going off in a new direction or even abandoning their original idea entirely, you might ask them, "Why did you make a different plan?" or "What made you think of doing that instead?" Again, the idea is not to force them to stick to one idea, but to encourage them to ponder their options, preferences, and problem-solving strategies.

Dialogue in number 4 (above) adapted, by permission, from M. Hohmann & D.P. Weikart, *Educating Young Children: Active Learning Practices for Preschool and Child Care Programs,* 2d ed. (Ypsilanti, MI: High/Scope, 2002), 238.

8. Encourage children to carry over their activities to the next day. As children reflect on their experiences, they may recall problems they encountered or spin-offs they had not anticipated. These observations create a perfect opportunity for them to try different solutions or build on newly discovered interests the following day.

You can encourage children to use their reflections in future planning in several ways. Write a note, or ask the child to write a note, that will serve as a reminder. Put an item or set of materials from the relevant area in the child's cubby. A favorite device in the High/Scope Demonstration Preschool is a Work in Progress sign. When children want to continue an art or construction project, this sign alerts others not to touch the unfinished work. It also acts as a visual memory aid when the children make plans the next day. Finally, it encourages children to share with teachers and families a description of what they have already done and their ideas for adding to the detail and complexity of their undertaking.

Conclusion

Engaging children in planning and reflection makes them more than mere actors following prescribed roles. It turns them into artists and scientists who make things happen and create meaning for themselves and others. As you implement the strategies suggested here, you will discover that the complexity of children's planning and reflection parallels the development of their play.

Young children play in simple ways for short periods of time. As the school year progresses, their play becomes more elaborate in its use of materials, language accompaniment, and range of social interactions. It also lasts longer and is more likely to be resumed at a later point. Similarly, children's plans reflect the growing depth and range of their intentions. In fact, sometimes just telling the story of what they intend to do is as satisfying as actually carrying it out.

Likewise, children's ability to remember and explain what happened during play becomes increasingly intricate. Their speculations may not even be limited to what occurred during class, but may extend to related events or people at home or in other settings. Observing and tracking these changes allow teachers a window into how children think about their surroundings, the impact of their actions, and the implications of the past and present for their subsequent behavior.

Reflection is remembering accompanied by evaluation.

The research and examples presented here show that planning and reflection are highly effective mechanisms for developing thinking skills in young children. Planning is making a choice with the added ingredient of intentionality. It incorporates a mental process that is fundamentally different from merely indicating a preference with no thought as to how the chosen item will be put to use. Reflection is remembering accompanied by evaluation. It transforms a simple exercise of memory into a thoughtful procedure that explores means-ends connections.

Planning and reflection thus involve decision making and problem solving. They encourage children to take the initiative in pursuing their interests, engendering a sense of control over the environment and one's ability to transform it. As children make plans and review their experiences, they enhance their predictive and analytical abilities, harness self-regulatory mechanisms, and develop a sense of responsibility for themselves and the choices they make. By encouraging these twin processes—expressing intentions and evaluating actions—we can equip young children with the thinking skills they need for later schooling and adult life.

References

Arts Education Partnership. 1998. *Young children and the arts: Making creative connections —A report of the Task Force on Children's Learning and the Arts: Birth to Age Eight*. Washington, DC: Author.

Dickinson, D.K., & M.W. Smith. 1994. Long-term effects of preschool teachers' book reading on low-income children's vocabulary and story comprehension. *Reading Research Quarterly* 29 (2): 105–22.

Epstein, A.S. 1993. *Training for quality: Improving early childhood programs through systematic inservice training*. Ypsilanti, MI: High/Scope.

Evans, B. 2002. *You can't come to my birthday party! Conflict resolution with young children*. Ypsilanti, MI: High/Scope.

Hohmann, M., & D.P. Weikart. 2002. *Educating young children: Active learning practices for preschool and child care programs.* 2d ed. Ypsilanti, MI: High/Scope.

NAEYC. 1998. *Accreditation criteria and procedures of the National Associations for the Education of Young Children,*1998 ed. Washington, DC: Author.

National Council of Teachers of Mathematics. 2000. *Principles and standards for school mathematics.* Reston, VA: Author.

National Research Council. 2000. *Eager to learn: Educating our preschoolers*. Washington, DC: National Academy Press.

Snow, C.E., L.B. Resnick, G.J. Whitehurst, & J. Daniel. 2001. *Speaking and listening for preschool through third grade*. Washington, DC: New Standards.

Sylva, K. 1992. Conversations in the nursery: How they contribute to aspirations and plans. *Language and Education* 6 (2): 141–48.

U.S. Department of Health and Human Services, Administration for Children and Families, Head Start Bureau. 2002. Program performance standards and other regulations. Online: www2.acf.dhhs.gov/programs/hsb/performance/index.htm

Veen, A., J. Roeleveld, & P. Leseman. 2000, January. *Evaluatie van kaleidoscoop en piramide eindrapportage.* SCO Kohnstaff Instituut, Universiteit van Amsterdam.

Vogel, N. 2001. *Making the most of plan-do-review: The teacher's idea book #5*. Ypsilanti, MI: High/Scope.