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Teaching Students to Think Pages 38-42

An Early Start on Thinking

Careful observation and planning are the keys to creating an environment that encourages young children to think critically.

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A group of children, ages 3 to 5, is thinking about the concept "big." The teacher holds up a picture with three big hamburgers and two small ones and begins talking with the students:

Teacher: *(Pointing to a big hamburger.)* See this hamburger? This hamburger is big. *(Points to other big hamburgers.)* This hamburger is also big, and so is this one. Jared, can you point to a hamburger that is big?

Jared: *(Points correctly.)*

Teacher: Good job, Jared. How about you, Celia? Can you find a big hamburger?

Celia: This one. *(Points to a small hamburger.)*

Teacher: Sorry, that's not a big hamburger. Try again.

Celia: *(Points to the other small one, studies the teacher's face, and switches to a big hamburger.)*

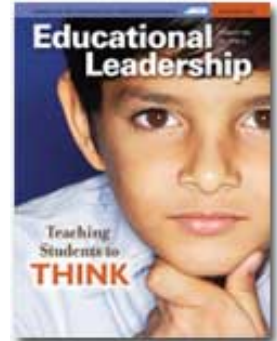
Teacher: That's right! *(Points to pictures in random order and speaks to the whole group.)* Is this hamburger big? How about this one? *(Most answer "Yes" or "No." Others watch silently, fidget, or look around the room.)* OK, class! Now we know how to find all the big hamburgers.

In another classroom, a teacher observes children at the water table during free play. They squeeze eyedroppers and discover they make bubbles. The children comment on their size and number and squeal with delight when they burst. Their excitement gives her an idea for small-group time the next day.

Teacher: Yesterday, Ian and Ofelia made bubbles at the water table with eyedroppers. Here's another way to make bubbles. *(She gives each child a straw and a bowl filled with a mixture of water and dish detergent and blows into the bowl with the straw.)* Let's see what kinds of bubbles you can make.

Stacy: Mine's getting bigger and bigger and biggest. It's bigger than the bowl now.

Teacher: I wonder what will happen if you keep blowing.



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Stacy: I think it's gonna grow to the sky!

Ofelia: Look, my three [bubbles] are stuck together.

Teacher: What do you suppose makes them stick like that?

Ofelia: Maybe there's glue in the water.

Ian: I made mine disappear.

Teacher: How did you do that?

Ian: I poked it. (*Pops another bubble with his finger.*)

Stacy: Mine disappeared when I blowed hard on it!

Becca: If you blow really fast, you get tons of little bubbles.

Teacher: Show me how to blow fast.

Becca: (*Demonstrates lots of short rapid breaths.*)

Teacher: (*Imitates Becca.*) Now the bubbles in my bowl look the same as yours.

Nell: When Grammy gives me a bath, I get smelly bubbles.

Teacher: What do the bubbles smell like?

Nell: Like grape candy.

Ofelia: My mommy gives me bubbly baths, too, with pink flowers on the squirter.

In the first example, the teacher follows a script. Children hear the word *big* and look at drawings of two sizes of hamburgers. In the second example, children learn about bigness by working directly with materials and engaging in valuable social interactions. They make observations, see what their peers are doing, and respond to thoughtful comments and questions from an adult. The teacher, together with the children, wonders, What would happen if ...? and, Why do you suppose ...?

Although many children in the hamburger activity appear engaged, others are confused or have turned their attention elsewhere. In the bubble activity, everyone is involved. While having fun, they are also thinking about how bubbles are made and unmade; their properties (stickiness, smell); and the consequences of their own and others' actions (poking, blowing hard or fast). In short, these children are exercising a wide range of thinking skills.

For students to become critical thinkers, teachers must not only encourage such behavior in the classroom but also model critical thinking themselves. Good educators engage in intentional teaching that is "planful, thoughtful, and purposeful" and that uses "their knowledge, judgment, and expertise to organize learning experiences" (Epstein, 2007b, p. 1).

Young Children as Critical Thinkers

To explore how teachers can support the development of thinking skills in students, we need a clear picture of what critical thinking looks like so that we can create and follow a path that will

take children to this destination. The development of critical-thinking skills begins early, as illustrated in these anecdotes of 3- to 5-year-olds:

- Amelia wanted to make a Peter Pan hat. She said she needed green fabric and a feather. When there was no fabric available, she chose green paper and a pink feather. She folded and glued the paper, then decided it did not look like a hat. She cut and stapled two lengths of string at the corners and tied it under her chin. "This is his sister's hat," she explained.
- Lily explained that the "ooey goeey" was "sticky" and said, "When you put it on towels it doesn't get off, so that's not a good idea."
- Luke covered the message board with swirly lines and said, "We can't go outside today because I drew thunder and lightning."
- Drew took apart an electronic unit in the woodworking area. He got a screwdriver and undid the small screws, explaining, "See, my screwdriver is going up because the screws are getting looser."

These examples show that young children are capable of planning and reflecting, key aspects of critical thinking. As planners, children begin with a goal (such as making a Peter Pan hat) and decide where to work, what materials to use, how to manipulate them, whether to work alone or with others, and so on. When reflecting, children do more than remember what they have done: They apply the lessons learned (such as not wiping sticky "ooey goeey" on towels). The application may involve trying alternative solutions, doing something better next time, explaining something to another person, or even generating more questions and planning more experiments.

Critical thinking in children thus looks like scientific investigation in adults. Children have an end point in mind, choose materials and actions, observe the effects of their actions, create explanations about why something is (or is not) working as intended, make adjustments as needed, and continue to act and evaluate until they have resolved the matter to their own satisfaction (which is not necessarily the same as an adult's idea of a "solution").

Research supports the idea that young children can become thoughtful problem solvers if they are encouraged to plan and reflect on their actions (Epstein, 2003). Early childhood education has come to recognize the importance of planning and reflection in its curriculum recommendations, which state that prekindergarten students need opportunities to plan and make choices (see, for example, Head Start Bureau, 1998; National Association for the Education of Young Children, 2005). The High/Scope Preschool Curriculum features a plan-do-review sequence in which children *plan* what they want to *do*, carry out their ideas, and *review* their experiences with their teacher and peers (Epstein, 2007a).

Planning for Critical Thinking

To promote thinking in children, teachers must themselves be intentional in their practices and diligent about evaluating their effectiveness. It helps to plan and reflect with another person who is familiar with the students and classroom schedule. Many prekindergarten programs use

a team-teaching model, which not only benefits the students, but also contributes to the professional development of thinking practitioners.

Team planning is most effective when teachers share objective anecdotal notes about children. The notes focus on what children say and do without making subjective judgments about the value of their words and actions. For example, team teachers Sara and Chloe recorded this anecdote in a preschool classroom:

07/06/07: At work time, in the block area, Melvin, Nani, and Pauli worked together to make a block ramp and drive their small cars down it.

At the end of the day, Sara and Chloe met to discuss the observation, what it indicated about their students' development, and how they could support further learning.

Sara: I don't remember those three playing together before.

Chloe: You're right. Melvin and Nani were working with the blocks when Pauli came over. Pauli always has a car in his hand!

Sara: When the ramp was built, Nani called it her "road" but Melvin called it a "ramp." Later at outside time, Nani filled a bucket with sand, dumped it on the other side of the sand pit, and smoothed it out. She asked me if I wanted to help her make "better roads."

Chloe: That's interesting. The city is doing major repaving. I wonder if at work time she was more interested in the street-building part than in driving cars down the ramp.

Sara: Could be. Let's ask her grandmother if their street has been repaved yet.

Chloe: I noticed on my way to work that they're doing the street two blocks down. What about going on a walking field trip to watch the work?

Sara: That would give Nani and the other children a concrete experience with road building. If we go in two days, we'll have time to put up a sign to notify parents.

Chloe: I'll stop on my way to work tomorrow to make sure the road crew will still be there.

Sara: And warn them we're coming!

The teachers continued by discussing Melvin's excitement over watching cars speeding down the ramp. They then planned an outdoor large-group activity with a parachute to explore fast and slow. They noted that Pauli was beginning to take an interest in playing with others and decided on a role-playing activity involving cars that may help build on his new social skills (journal entry and dialogue adapted from Marshall, 2005, pp. 325, 330–331).

In their discussion, Sara and Chloe were thinking like investigators. They relied on observations and their knowledge of child development to solve the "problem" of what to do with the class in the coming days. Instead of using scripted lessons, they created hands-on learning opportunities based on their students' interests and developmental progress.

If you teach without a teaching partner in your class, you can partner with a teacher in another classroom or record and review anecdotes on your own. The important thing is to observe, record, review, and plan regularly, preferably daily.

Thinking in the Classroom

As you observe, reflect, and plan educational experiences for young learners, the following strategies are especially effective.

Provide Opportunities to Plan and Reflect

Caitlin made a plan to "sit in the tent and read a book." When asked for details about her plan, she said she would dress up and be a lady. She put on sunglasses and gloves and looked at books in the tent with Kobe.

Mack, a teacher, encouraged students to reflect by asking them to wrap an object in a scarf so he could guess what they played with at choice time. Drew hid a small horse figure and gave Mack these clues: "It's something that gallops, has a medium-sized neck, has hair, and stick-up ears."

Planning like Caitlin's and reflection like Drew's does not come naturally. When these processes are a regular part of the day, children learn to value them and practice the relevant skills.

Wonder Together with Children

Gabrielle told her teacher and classmates that she saw half a spiderweb. Gloria, her teacher, asked what happened to the other half. Gabrielle said, "Maybe it disappeared." Gloria said, "How do you suppose that happened?" Gabrielle thought for a moment and replied, "Maybe when Samson [her cat] ran through the bushes chasing a bird."

Gloria asked a genuine question for which she did not know the answer. Encourage children to answer such questions and to consider, What would happen if ... or, Suppose you did it this way ..., and then give them time to see whether their solutions or predictions work. By describing the results of their own investigations, children learn to alter their thinking to fit what they observe.

Encourage Children to Elaborate on Their Ideas

Henry said, "I'm the funniest person I know." His teacher, Shannon, asked, "How do you know you're funny?" Henry said, "Because I laugh after I say something." Shannon's simple follow-up question helped Henry think about his statement in more detail.

As they get older, children can provide increasingly complex information and explanations. You might ask, How did you put that together? or, Why do you think it toppled over? If they come to a conclusion on their own, children are more likely to apply their reasoning in other situations.

Ask Children to Solve Problems

Ben wanted Amelia to pretend to be his dog—but so did Lily. Their teacher, Chantelle, asked how they could solve the problem. Ben said, "I can be a dog, and Lily can be the owner for both

dogs." Lily agreed.

You can encourage this kind of thinking by pointing out problems students may not be aware of or encouraging them to articulate what they perceive to be a problem. Listen to children's solutions and accept them, even if they are different from yours. Encourage children to see whether their ideas work and to consider other options if they don't.

Use Encouragement, Not Praise

Brent and Tomas worked together to prop up a large cardboard box with blocks so they could crawl through it. First they tried small square blocks, then larger rectangular ones. When Olivia, their teacher, asked why the small blocks did not work, Brent pointed to the large blocks and said, "Because those are heavier."

Encourage children by listening to their ideas, asking open-ended questions like Olivia's, observing and commenting on what children are doing, and sharing children's thoughts with their classmates and parents. Such encouragement is more helpful than praising children's work and ideas because if you say "good job" or "great idea" one day, you may inadvertently convey disapproval if you neglect to say it another day. When praise becomes a goal in itself, it can end the conversation.

Mindful Habits

To help children to become creative thinkers and problem solvers, teachers must exercise critical thinking themselves. The mechanism is the same regardless of age. Critical thinkers plan and reflect. By using these twin processes to create engaging instructional experiences, teachers can imbue young children with the mindful habits that they need to succeed in school and in life.

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