The Thought-Fille

Everyone thinks. Keeping five themes in mind will ensure that every learner thinks skillfully.

Arthur L. Costa

How do you know that your students need to learn how to think?

When I have posed this question to teachers of all grade levels in countries around the world, teachers have given surprisingly similar and consistent descriptions of their students' thinking:

- They just blurt out answers. They should think before they respond.
- They depend on me for their answers. I wish they would think for themselves.
- They give up so easily on difficult tasks. I'd like them to hang in there.
- They can't seem to work in groups. They must learn to cooperate and work together.
- They don't apply their knowledge. I want them to use what they know in other situations.
- They are afraid to take risks. I'd like them to be more creative, more adventuresome.

Such comments reflect teachers' awareness that to function in school, at work, and in life, students must persist when faced with adversity, solve cognitively complex problems, draw on vast reservoirs of knowledge, and work collaboratively. To strengthen these skills, instruction must become more reflective, complex, and relevant (Commission on the Whole Child, 2007). Curriculums must become more thought-filled in the sense of enlarging students' capacities to think deeply and creatively.

Five Themes to Shape Curriculum

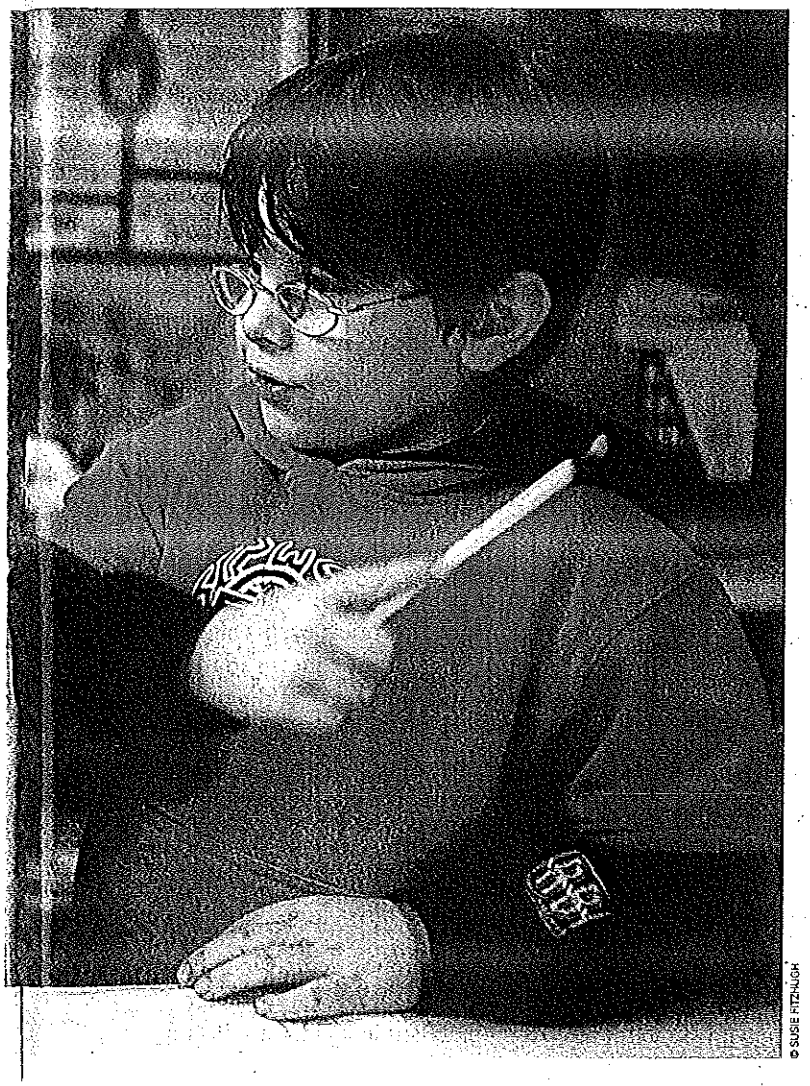
I propose that educators make five themes part of any thought-filled curriculum. These themes provide lenses through which we can shape, organize, and evaluate curriculums.

1. Learning to Think

Iron rusts from disuse; stagnant water loses its purity and in cold weather becomes frozen; even so does inaction sap the vigor of the mind. — *Leonardo da Vinci*

Humans are born with the capacity and inclination to think. Nobody has to "teach us how to think" just as no one teaches us how to move or walk. Moving with precision and style,

Curriculum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however, takes much time and coaching. The distinction between awkwardness and grace is obvious to even an undisciplined observer. A superb ballerina, tai chi master, or gymnast needs years of practice, concentration, reflection, and guidance to perform intricate maneuvers on command with seemingly effortless agility.

Like strenuous movement, skillful thinking is hard work. And as with athletics, students need practice, reflection, and coaching to think well. With proper instruction, human thought processes can become more broadly applied, more spontaneously generated, more precisely focused, more complex, and more insightfully divergent.

Unlike athletics, however, thinking is usually idiosyncratic and covert. Awkwardness and agility are not as easily distinguished in thinking as they are in athletics. Definitions of thought processes, strategies for their development, and assessment of the stamina required for increased mastery, therefore, are elusive, as the following classroom interaction illustrates.

After showing a class of 8th graders how the Earth's population is likely to double in the next 50 years, a teacher asks students what could be done to solve the problem of population explosion.

STUDENT: I don't know.

TEACHER: Well, think about it. We may not have enough food and space. It's a problem we will need to solve.

STUDENT: We could send some people somewhere where they won't need food and space.

TEACHER: Where?

STUDENT: Uh, into space.

TEACHER: Why there?

STUDENT: They won't need to eat our food or live here anymore. (Swartz, Costa, Kallick, Beyer, & Reagan, 2007, p. 9)

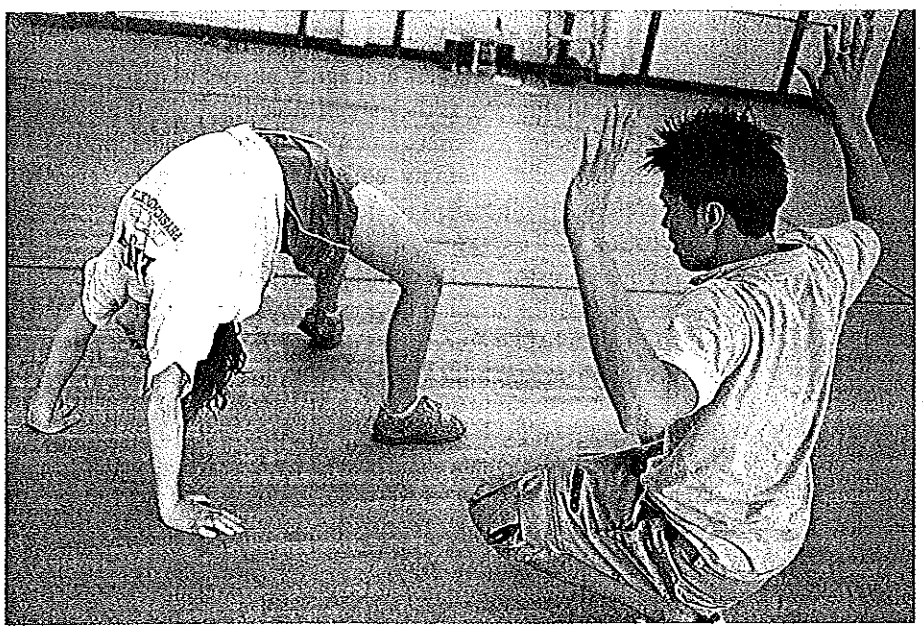
Is this student thinking? Yes. Is this student thinking critically, skillfully, and creatively? It seems not.

Teachers who value thinking and habits of mind would ensure that students confront a problem like population expansion with a questioning attitude, arm themselves with attendant data, explore alternatives to the status quo, and predict the consequences of each of those alternatives. A contrasting teaching approach here might bring out strenuous thinking by taking time as a class to gather more information and understand why the problem exists. A teacher might pose such questions as, Where in the world has this problem been encountered and resolved in the past? What alternative solutions might be generated? or, By what humane and just criteria might the consequences of each of those solutions be evaluated?

Although thinking is innate and spontaneous, *skillful* thinking must be cultivated. One way to enhance such thinking is to get students intrigued by relevant, generative, conceptual knowledge. Cognition and content are inseparable. One cannot think about "nothing," and deep conceptual understanding requires such cognitive skills as comparing, analyzing, applying, translating, and evaluating (Wiggins & McTighe, 1998). Further, the deeper knowledge a learner has, the more analytical, experimental, and creative are that learner's thought processes (Willingham, 2007).

We can catalyze learning to think by making thinking skills explicit. We should use cognitive terminology and label and identify cognitive processes, saying, for example, "So as you're *analyzing* this problem..." (Costa & Marzano, 2001). Teachers should also employ thinking maps and visual tools (Hyerle, 2004) and model problem solving, decision making, and investigating (Swartz et al., 2007).

It is not enough, however, for students to learn thinking and problem-solving skills in teacher-constructed classroom situations. They must also develop the inclination to use productive habits of mind, including persisting, managing impulsivity, thinking flexibly, striving for accuracy, and remaining open to continuous learning—on their own (Costa & Kallick, 2001).



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2. Thinking to Learn

Learning is an engagement of the mind that changes the mind.

—*Martin Heidegger*

Meaning making is not a spectator sport. Knowledge is a constructive process; to really understand something, each learner must create a model or metaphor derived from that learner's personal world. Humans don't *get* ideas; they *make* ideas.

Content learning, therefore, should not be viewed as the only aim of instruction. Rather, teachers should select relevant, generative, wondrous content to serve as a vehicle for the joyride of learning. We can equip that vehicle by

- Posing challenging, content-embedded questions and problems that tax the imagination and stimulate inquiry.
- Inviting students to assess their own learning.
- Urging students to question their own and others' assumptions.
- Valuing students' viewpoints by maintaining a safe, nonjudgmental classroom atmosphere.

For example, to challenge students to dig deeper into historical perspectives, a teacher might have 5th graders compare and contrast two versions of the story of Pocahontas and John Smith by reading the fictionalized account *The Double Life of Pocahontas* (Fritz, 1987) and watching the Disney movie *Pocahontas*. Students could work in groups to take notes about the characters, setting, plot, and events depicted in the movie and to extract details from the text.

The teacher might direct student groups to draw conclusions about the accuracy of historical events after they identify significant patterns in the similarities and differences of the two sources (Reagan, in press). As each group shares its conclusions, the teacher should reinforce the skill of valuing others' viewpoints by reminding all students to paraphrase, clarify, or question what their peers in other groups report, so that they can better understand each group's conclusions rather than judging them. Following the discussion, students might reflect in their journals about skills to keep in mind when striving for accuracy and searching for truth; the value of listening to and empathizing with a speaker; how well they think they listened and empathized in this activity; and situations in school, home, and life that require them to strive for accuracy and listen with understanding and empathy.

3. Thinking Together

Friendship is one mind in two bodies.
—Mencius

Meaning making is not just an individual operation. Learning is a reciprocal process; the individual influences the group's thinking, and the group influences the individual's thinking (Marzano, Pickering, & Pollock, 2001; Vygotsky, 1978). Instructional techniques that encourage group activities help students construct both their own and shared knowledge.

When learners fail to see the interconnections and coherence of divergent views, collaborative thinking falters. If each student fixates on his or her own certainties, each perceives the solution to a problem solely from his or her own viewpoint. Such an egocentric view hinders serious reflection and honest inquiry.

Another purpose of a thought-filled curriculum, therefore, is to build an "ecology of thought"—a network of shared memories and awareness that links community members together (Isaacs, 1999). Collegial interaction is a crucial factor in the intellectual ecology of the school and classroom. Collaboratively, individuals can elicit thinking that surpasses individual effort, but such collaboration is difficult because it means temporarily suspending what I, individually, think. It means relaxing our grip on certainties and opening our minds to new perspectives, abiding by and supporting group decisions that are arrived at through deep, respectful listening and dialogue. Learners must come to understand that as they transcend the self and become part of the whole, they will not lose their individuality, only their egocentricity.

Learning to listen with understanding and empathy may be one of the least-taught skills in school, yet it is one of the most powerful skills of intelligent problem solvers (Steil & Bommelje, 2007). Thought-filled curriculums should include instruction in and practice of

- Focusing mental energy on understanding others.
- Summarizing and paraphrasing others' thoughts.
- Empathizing.
- Monitoring clarity in communication.
- Setting aside judgments, solutions, and autobiographical responses.

The deeper knowledge one has, the more analytical, experimental, and creative are one's thought processes.

4. Thinking About Our Own Thinking

I thank the Lord for the brain he put in my head. Occasionally, I love to just stand to one side and watch how it works.
—Richard Bolles

A broader intent of a thought-filled curriculum is the development of heightened consciousness of our own thinking among both teachers and students. The human species is known as *Homo sapiens sapiens*, which means "a being that knows its knowing." What distinguishes humans is our capacity for metacognition—the ability to stand back and examine our own thoughts while we engage in them. Although the human brain is capable of generating this reflective consciousness, generally we are not very aware of how we are thinking. Not everyone uses his or her capacity for metacognition equally (Csikszentmihalyi, 1993).

Learning to think begins with recognizing *how* we are thinking—by listening to ourselves and our own reactions and realizing how our thoughts may encapsulate us. Much of the kind of thinking people practice happens simply by virtue of their embedded habits, not because they closely examine their assumptions, their limited history, or their mental models.

Metacognition involves the whole of us: our emotions, bodily sensations, ideas, beliefs, values, character qualities, and the inferences we generate from interactions with others. When confronted with perplexing, ambiguous situations, skillful thinkers engage in an internal mental dialogue that helps them decide on intelligent actions. We can get students into the habit of such mindful probing by using self-reflective questions like these:

- How can I draw on my past successes to solve this new problem? What do I already know about the problem, and what resources do I have available or need to generate?
- How can I approach this problem flexibly? How might I look at the situation from a fresh perspective? Am I remaining open to new possibilities?
- How can I make this problem clearer, more precise, and more detailed? Do I need to check out my data sources? How might I break this problem down into its component parts and develop a strategy for approaching each step?
- What do I know or not know? What might I be missing, and what

questions do I need to ask?

- What strategies are in my mind now? What values, beliefs, and intentions are influencing my approach? What emotions might be blocking or enhancing my progress?
- How is this problem affecting others? How might we solve it together, and what can I learn from others that would help me become a better problem solver?

Teachers can spur metacognition by directing students to verbalize plans and strategies for solving challenging problems—and by urging students to share their thinking as they monitor their progress, evaluate their strategies, and generate alternative strategies.

5. Thinking Big

I learned to make my mind large, as the universe is large, so that there is room for paradoxes. —Maxine Hong Kingston

Building a thought-filled curriculum serves the larger agenda of building a more thought-filled world—an interdependent learning community where people continually search for ways to care for one another, learn together, and grow toward greater intelligence. We must deepen student thinking to hasten the arrival of a world community that

- Generates more thoughtful, peaceful approaches to solving problems, rather than resorting to violence to resolve differences.
- Values the diversity of other cultures, races, religions, language systems, time perspectives, and political and economic views.
- Shows greater consciousness of how humans affect Earth's limited resources and how we must live in harmony with our delicate environment.
- Engages in clear and respectful dialogue to resolve misunderstandings.

While designing each lesson, thought-filled teachers focus on this larger vision by asking themselves, Are these learnings essential? How do they contribute to building more thoughtful classrooms, schools, and communities, and a more thoughtful world? Teachers encourage students to "think big" when they lead them to inquire into such moral, ethical, and philosophical questions as, What makes human beings human? What is beauty? What is justice? How can we learn to unite and not divide?

These five themes constitute unfinished tasks for teachers and curriculum designers in building a more thought-filled curriculum. As noted computer scientist Alan Kay (1990) stated, "The best way to predict the future is to invent it." If we want a future that is vastly more thoughtful, cooperative, compassionate, and loving, then we have to create it. The future is in our schools and classrooms today.

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