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# Thinking About Thinking



Preservice  
Teachers  
Strengthen  
Their Thinking  
Artfully

By Susan L. Barahal

**E**ducators often take thinking for granted. After all, thinking is something that we do naturally, without “thinking” much about it. Teachers expect their students to think about what they learn and to learn to be good thinkers.

But what does it mean to be a good thinker? How can teachers know when students are thinking deeply? Can teachers help students become better thinkers?

Indeed, how many teachers even discuss the topic of thinking with students? And what do we want students to learn and think deeply about?

For two years, I’ve explored the topic of thinking with small groups of preservice teachers to learn how looking at and exploring art images could deepen and strengthen their own thinking and that of their stu-

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dents. Over time, these preservice teachers shifted in their thinking about thinking and became more aware of the importance of deep thinking. They showed greater appreciation for the value of identifying “big ideas” in their respective subject disciplines and of rethinking their curriculum and classroom lessons around these ideas.

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What exactly does it mean to think critically? Since thinking is “invisible,” how can teachers identify it and recognize when it’s taking place?

During these group discussions, I often asked my preservice teachers if they wanted their students to be good thinkers, and they seemed surprised and a bit perplexed by my question. Of course they wanted their students to be good thinkers. In fact, they said they wanted their students to be “critical thinkers.”

But what exactly does it mean to think critically? Since thinking is “invisible,” how can teachers identify it and recognize when it’s taking place? Finally, how can teachers model good thinking to their students and create a classroom environment that en-

courages thinking and provides the time that thinking takes?

In our group meetings, we discussed the challenges our preservice teachers faced in their new roles as teachers and explored possible strategies that could inform their teaching and help them and their students become good thinkers. I also introduced my preservice teachers to the concept of Artful Thinking in order to learn whether it could strengthen their thinking and help put them in touch with the “big ideas” in their subjects that would lead to more meaningful classroom lessons.

## ARTFUL THINKING

Project Zero at the Harvard University Graduate School of Education developed Artful Thinking to help students learn to think by looking at and exploring works of art. At the core of Artful Thinking is the Artful Thinking Palette (see Figure 1), which provides a meaningful visual reference for the kinds of thinking that can take place in the classroom.

Each of the six colors on the palette represents thinking dispositions. In practice, different types of thinking are often combined or overlap with one another. So, just as an artist working with paint can create limitless hues and shades from just a few different colors, students move naturally among various thinking dispositions, blending or overlapping the various kinds of thinking.

In addition to the metaphor of the artist’s palette, Artful Thinking uses simple thinking routines to help

guide student thinking. These routines are flexible and can easily be used to strengthen student thinking about virtually any topic or subject, from a math problem to an historical document, from a poem to a work of art. (See Figure 2 for one example of a thinking routine, the “Think/Puzzle/Explore” routine.)

Thinking routines are like many other classroom routines with one significant difference. Instead of helping students know what to do, thinking routines are designed to provide students with a framework for thinking and to help them to develop stronger thinking skills. When used regularly, thinking routines help students master and internalize new thinking processes until they become second nature.<sup>1</sup> Using works of art is a good place to begin practicing these thinking routines. Because most works of art are inherently provocative, they encourage viewers to make observations and ask questions, thereby engaging them in different types of thinking. For these reasons, exploring works of art can help broaden the “thinking repertoire” of students and alert them to situations in which using different thinking modes can expand their understanding of a subject or issue.

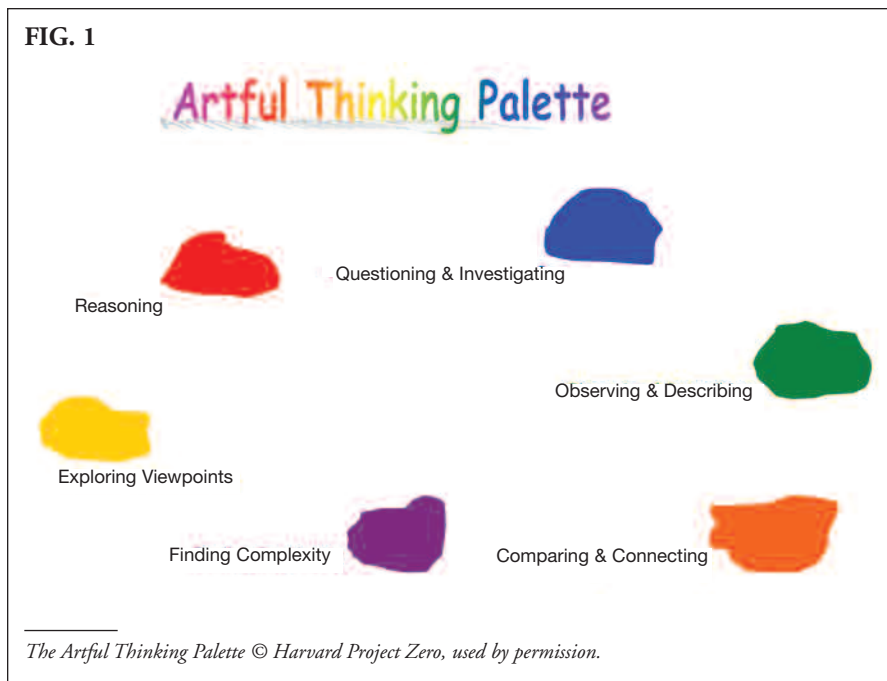
## PRESERVICE TEACHERS MEET ARTFUL THINKING

In our first group meeting, I asked my preservice teachers to create a “mind map” of the kinds of thinking in which they engage when learning something new. This exercise not only helped jump-start their efforts to think about thinking, but also made their thinking processes visible for them, documenting the extent, and the limits, of their thinking.

I also asked my preservice teachers to bring in samples of student work so we could examine them closely for evidence of thinking. For example, in examining a student writing sample, one preservice teacher described it as “complex” because the sentences were in order and built upon each other. Another noted that the writing sample reflected a “love of writing” because the student referenced his next piece of writing (alluding to a sequel).

These reviews and discussions around student work represented a powerful teaching tool for my preservice teachers, because they could clearly see evidence of thinking in

FIG. 1



the student work and see that their students were capable of deep thinking. The discussions also made my preservice teachers think about how best to further develop this thinking capacity in students.

We then looked at an art image using the Artful Thinking routine called “Think/Puzzle/Explore” (see Figure 2). Using this routine to explore the art image resulted in a lively discussion, with each observation generating more comments and questions. My preservice teachers were also struck by how many of their questions were open-ended and not easily answered. We talked about the importance that asking good questions can play in the thinking process.

FIG. 2

### An Example of the Think/Puzzle/Explore Routine

**THINK:**

What do you *think* you know about this topic?

**PUZZLE:**

What questions or *puzzles* do you have?

**EXPLORE:**

What does the topic make you want to *explore*?

Finally, we discussed the kind of thinking that they wanted students to engage in and what they could do to strengthen student thinking. Here, the Artful Thinking Palette gave them a vocabulary when talking about thinking and helped them visually categorize the kinds of thinking they wanted in their classrooms. My preservice teachers could also clearly see how they could use the Artful Thinking Palette with their own students to facilitate conversations about thinking.

## IMPACT OF ARTFUL THINKING

The preservice teachers met regularly with me for nine months and also were required to e-mail me one journal reflection each week that focused on a particular issue regarding their student teaching experiences. They also were required to write a final reflection about trends, themes, and growth during their teaching internship.

At the end of the year, I also asked my preservice teachers to create a new “mind map” of their think-

ing, to compare their two maps, and to write a reflection about the differences they observed.

My notes, the preservice teachers’ journals, and their before-and-after “mind maps” were rich with information on how my preservice teachers’ thinking changed over the course of the year. Here are some of the findings that emerged from this year-long research.

**Few teachers think about thinking.** The most striking finding of this research was that my preservice teachers agreed that, before we began meeting together, they had never thought about thinking or how they might create opportunities for their students to think. Further, while a few had incorporated art into lessons to reinforce a point or illustrate an event, none had thought about using art images to deepen student thinking and make connections to the “big ideas” in the curriculum.

Early in the year, all of my student teachers said they wanted students to be critical thinkers. But, they had not really thought about what that meant, nor had they thought about what the evidence of good thinking would look like. Writing in his journal toward the end of the year, one preservice teacher observed:

I think thinking and utilizing activities that promote thinking were very useful. Personally, I never thought about thinking. Forcing myself to do this has allowed me to think deeper and broaden my lessons to accommodate critical thinking rather than only content. These models also showed me how to tackle these topics in an organized fashion rather than jump into topics without directions.

One preservice teacher became conscious of how important the thinking process is when making art. She wrote:

I used to think about the role of thinking, but did not think about making this thinking visible. Now, I think it is important to provide students with vocabulary to talk about thinking. It is important to make thinking visible (literally) in the art room. I used to think constantly while working, but did not take specific notice about the types of thinking I was using.

**Teaching to think requires a “big picture” perspective.** Looking at art images using the Artful Thinking routines forced my preservice teachers to move beyond the details in an image and focus on the larger issues in the composition, such as patterns, relationships, and multiple perspectives. This approach helped my student teachers synthesize information, make sense of the details, and discover that art images have the potential to elicit multiple interpretations, to

resonate with personal associations, and to activate prior knowledge.

As such, my preservice teachers were better able to appreciate the importance of identifying big ideas in their respective disciplines and to better appreciate the unifying themes and connections that exist among all subjects.

This was made evident by the experience of one of my preservice teachers, who was creating a final exam on the Shakespeare play, *Macbeth*. Initially, she planned to ask students a number of true and false questions that focused on factual information from the play. Most of her students would never again encounter Shakespeare, so I asked her what she wanted her students to remember about the play. That led to a discussion about the “big ideas” in *Macbeth* and to a change in the approach that she took regarding the exam.

As she wrote in her reflection journal:

This Friday, I gave my students their *Macbeth* unit exam. . . . After speaking with you and reviewing my objectives and goals, I decided that the objective of the test would be for the students to show their ability to manipulate, control, and extrapolate on their already proven knowledge of *Macbeth*. The test results I have received are very promising.

Another preservice teacher reflected on the Artful Thinking approach and how it helped inform her art making. She wrote:

Thinking about these strategies in studio courses helps us develop a philosophical view about the world which can feed our imaginations to enhance our art-making process.

**Teaching to think requires a focus on the student and looking for clues as to the current state of their thinking.** My preservice teachers had never looked closely at student work for evidence of thinking or for clues as to whether their teaching approach was achieving the desired results. However, through our work together, my preservice teachers began to dissect student work and to glean important insights into student thinking.

For most, it was the first time they understood that student work could provide a window into their thinking and into their understanding of the subject matter. In fact, most said their primary focus had been on the content of what they wanted to teach and their agenda for each class. But our discussions shifted their focus to their students and what their students were thinking and understanding.

## Additional Resources

Artful Thinking web site:  
[www.pz.harvard.edu/at/cc\\_intro\\_new.cfm](http://www.pz.harvard.edu/at/cc_intro_new.cfm)

Ritchhart, Ron. *Intellectual Character: What It Is, Why It Matters, and How to Get It*. San Francisco: Jossey-Bass, 2002.

Ritchhart, Ron, and David N. Perkins. “Life in the Mindful Classroom: Nurturing the Disposition of Mindfulness.” *Journal of Social Issues* (Spring 2000): 27-47.

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Tishman, Shari. “Added Value: A Dispositional Perspective on Thinking.” In *Developing Minds: A Resource Book for Teaching Thinking*, rev. ed., ed. Arthur L. Costa. Alexandria, Va.: Association for Supervision and Curriculum Development, 2001.

Tishman, Shari, and Parker Palmer. “Visible Thinking.” *Leadership Compass*, vol. 2, no. 4 (2005): 1-3.

Tishman, Shari, and David N. Perkins. “The Language of Thinking.” *Phi Delta Kappan* (January 1997): 368-74.

Visible Thinking Team at Project Zero. “Visible Thinking — Thinking Routines: Pictures of Practice,” DVD. Cambridge, Mass.: Project Zero, Harvard Graduate School of Education, 2005.

Visible Thinking web site:  
[www.pz.harvard.edu/vt/VisibleThinking\\_html\\_files/03\\_ThinkingRoutines/03a\\_ThinkingRoutines.html](http://www.pz.harvard.edu/vt/VisibleThinking_html_files/03_ThinkingRoutines/03a_ThinkingRoutines.html)



One preservice history teacher wrote:

I used to think that I needed to give lectures to students, information to stimulate their thinking. Now I think that there are many opportunities to think before lectures, such as assessing prior knowledge and thought that can help them think about and apply what they already [know] to different situations.

Thinking about thinking provoked my preservice teachers to think about teaching differently and to be more student centered.

**Teachers must be both facilitators and mentors.**

Teaching to think is different than merely teaching content and requires an inquiry approach. My preservice teachers quickly found that the Artful Thinking routines required them to be facilitators and mentors, rather than conveyors of information. The routines moved my preservice teachers toward more of an inquiry-based approach and helped them develop and practice their facilitation skills.

Furthermore, the inquiry-based approach led to even more questions and to uncovering additional perspectives that otherwise would have gone unnoticed. My preservice teachers commented on how the thinking routines encouraged these additional discussions and generated additional ideas.

A preservice biology teacher wrote:

I would like to see students explore opposite viewpoints more in the classroom when they are presented with information in the book. I want the students to question who came up with the theories that are presented and how they went about creating these theories. In science class, I can go about getting the students to think harder by questioning how students came to their conclusions. Forcing students to explain their reasoning will also help me to understand their thought process.

A preservice history teacher wrote:

I used to think as a teacher I should only be a facilitator to higher-level thinking. Now I think that students look for affirmation when they take a chance in higher-order thinking. I need to be a facilitator and a mentor.

**Good thinking can be cultivated.** Finally, good thinking can be cultivated and guided, but teachers need time to foster thinking in their students, and students need time and opportunities to practice their thinking. Thinking routines can play an essential role

in helping students deepen and strengthen their thinking and can gradually lead to the internalization of effective thinking dispositions.

For example, one preservice teacher wrote:

It is difficult to get students to automatically put on a “thinking cap,” so to speak, and to start thinking deeply. While there are many routines, it’s hard to get them to actively do it themselves. When they come across other situations, will they be able to sit down and think of a thinking routine? So the challenge is to get them to do it automatically.

Another preservice teacher observed:

The focus on deep thinking helped me to think more about what deep thinking is (its definition) and how it can be encouraged and brought out in my students in the classroom.


The preservice biology teacher wrote:

I used to think that students were automatically critical of information that they received and that I would try to convey science in an interesting manner and that it would be relatively simple. Now, I think that students are critical thinkers, but they have to be taught certain critical thinking techniques that will enhance their learning experience.

## MEANINGFUL CONNECTIONS

I was anxious to see how preservice non-art teachers and art educators would react to the Artful Thinking Program and discussions around the topic of thinking. My preservice teachers seemed energized by the discussions and eager to have opportunities to think about thinking and the big ideas facing them as new teachers. So much of their mental energy is focused on organizational and housekeeping tasks, which are essential issues to new teachers and not to be minimized. Yet, our discussions were welcomed and sparked the preservice teachers to think in new ways.

Indeed, by focusing on the big ideas in their teaching, the preservice teachers were able to make meaningful connections with their students. They focused on student thinking and designed lessons that resonated with student interests and prior knowledge. Thinking about thinking provoked my preservice teachers to think about teaching differently and to be more student centered.

1. Ron Ritchhart, *Intellectual Character: What It Is, Why It Matters, and How to Get It* (San Francisco: Jossey-Bass, 2002), p. 89. 

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