



## Art Studio as Thinking Lab: Fostering Metacognition in Art Classrooms

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To cite this article: Julia Marshall & Kimberley D'Adamo (2018) Art Studio as Thinking Lab: Fostering Metacognition in Art Classrooms, *Art Education*, 71:6, 9-16, DOI: [10.1080/00043125.2018.1505377](https://doi.org/10.1080/00043125.2018.1505377)

To link to this article: <https://doi.org/10.1080/00043125.2018.1505377>



Published online: 16 Oct 2018.



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# ART STUDIO as Thinking Lab: Fostering Metacognition

## in Art Classrooms

Julia Marshall and  
Kimberley D'Adamo

WHAT CAN HIGH SCHOOL ART CLASSES OFFER TO BOTH ASPIRING ARTISTS AND STUDENTS WHO HAVE OTHER INTERESTS AND GOALS? Here's an answer: thinking skills. Thinking skills are essential for all learners, and both art creation and encountering art provide opportunities for complex thinking and, therefore, for honing conceptual skills (Eisner, 2002). Beyond that, art experiences can spur students to reflect on how they think and to expand and refine their thinking. That is to say, art classes can cultivate *metacognition*.



Figure 1. *My Thought Process Is Like a Gumball Machine* by Noah (2016).

# The art room is an ideal place to foster metacognition for six reasons.

Art's capacity to foster metacognition puts art education in sync with general education where understanding and monitoring one's thinking are acknowledged to be essential to an individual's success in school and life (Kolencik & Hillwig, 2011; McGuire & McGuire, 2015; Silver, 2013). The mindfulness inherent in metacognition also connects it to efforts to make classroom environments more inclusive and collaborative.

This article pursues both trains of thought and describes how an art class can be an *art thinking lab*—a site for everyone to practice thinking and develop metacognition together in the context of creative work. It describes pedagogy and curriculum developed by Kimberley D'Adamo, an art teacher at Berkeley High School in Berkeley, California, with support from her students and the co-author of this article.

## Metacognition

First narrowly defined by Flavell (1979) as thinking about one's thinking, metacognition is now understood as the ability to monitor one's thinking and learning (Kolencik & Hillwig, 2011; Silver, 2013). Silver (2013) explains metacognition as the act of stepping back from a task to name and frame what happens within it. This ability to step back is transferable to new situations and it benefits learning and thinking skill development in all disciplines. That is why the Common Core State Standards and the Next Generation Science Standards focus on the development of thinking skills and on metacognition.

Equally important, being metacognitive helps learners develop positive dispositions toward learning and gives them autonomy and agency, both of which generate motivation and engagement (Kolencik & Hillwig, 2011). Metacognition, therefore, is key to navigating challenges and problems, to fulfilling one's potential and thriving in life. No wonder the growing interest in metacognition.

## Metacognition in the Art Class

Metacognition is particularly important for people involved in creative endeavors, including artists. It enables them to build on what works, learn from mistakes, and get better at what they do. Being metacognitive can also ease a novice artist's anxiety about being creative by de-mystifying creativity through exposing the basic mechanisms of it. In doing so, it gives apprehensive art students the wisdom to handle challenges and disappointments and the strategies they can use to move forward.

The art room is an ideal place to foster metacognition for six reasons. **First**, it is a site for thinking. As Eisner (2002) argued, making art takes a lot of thought. This includes thinking before, during, and after creating works of art. For that reason, art teachers often ask their students to reflect on their thinking when they critique their artworks. In a milieu such as this, going beyond simply recognizing thinking to focus more closely on how thinking works is the next logical step.

**Second**, art classrooms are studios. In a studio environment, learners “do” art as well as study art. This is not often the case in academic classes where students primarily study content. Doing art encourages reflection on process and thinking within the context of hands-on experience. Here we can see why an art class could surpass its academic counterparts in fostering metacognition.

**Third**, the art class is where thinking gives rise to images and objects that are tangible, concrete manifestations of the thought that went into them. Images, in this case artworks, can make thinking visible and, therefore, accessible (Ritchart, Church, & Morrison, 2011). Art images, therefore, can spur conversations about how thinking intertwines with and shapes creative process and meaning making.

**Fourth**, the kinds of thought employed in an art class are many, complex, and diverse, and they produce a variety of outcomes. Eisner (2002) argued that art experiences prompt the brain to process sensory experience and connect it to ideas or prior experiences, make decisions and value judgments, and solve aesthetic problems. To this, he added the mental work of representing an idea or feeling in a visual form or material, or imagining something that is not there. Eisner highlighted the cognitive complexity of artmaking with its interweaving of perception, logic, and imagination. Understanding this complexity enables students to appreciate their minds and their artwork more fully.

**Fifth**, the art classroom is essentially communal with individuals working alone and in concert. For that reason, art classrooms encourage individual and collective thinking and learning. They can be places where swarm intelligence (Rolling, 2013) can emerge. Swarm intelligence is the collective capacity to learn and create. As a swarm, an art class can generate both group creativity and individual creativity. Group creativity materializes out of collective thinking toward a goal, while individual creativity is stimulated and cultivated through interaction with the group. For a swarm, developing metacognition is a collaborative endeavor and a binding force.

**Sixth**, art classes are sites of experimentation with pedagogical ideas and methods. This environment invites creative approaches to pedagogy, which could include arts-based research projects and a variety of exercises that focus on thinking and metacognition.

## The Art Thinking Lab

The art thinking lab provides an unusual model for art courses. Although it shares many of the goals and practices of more conventional art classes, the art thinking lab differs in its laser-like focus on particular basic art skills: thinking, learning, and creative inquiry. The following are key aspects of the model.

### *A Safe, Caring, and Inclusive Classroom*

When young people are asked to explore and expose personal things, such as how they think, they must feel comfortable, safe, and supported. The art thinking lab is a supportive environment that encourages all learners to excel, builds a sense of belonging for all, and eliminates the notion that some students are inherently more talented than others. It emphasizes every student's strengths, concentrates on the cognitive and technical skills all learners can master in their own way, and values each student's dispositions, thinking, and expression. The group activities discussed later in this article are key to constructing a safe environment.

An art thinking lab also promotes student influence and agency in the classroom. Over time, a supportive environment can evolve into a student-guided community. D'Adamo plants the seed for this transformation by introducing students to Critical Pedagogy (Freire, 1973), a progressive approach to education that upends conventional classroom hierarchies by shifting the power from the teacher to learners, who are thus enabled to take control of and responsibility for their learning. This change happens over time as a class progresses and becomes increasingly collaborative and student-centered.

### *A Focus on Learning Over Time*

Art-based thinking and learning develop over time and an art thinking lab highlights this, placing less emphasis on individual artworks as discrete manifestations of thought and more on the learning and thinking that emerges as ideas are researched and artworks are generated. This requires making explicit connections among artworks and ideas as they surface, and revisiting and revising each artwork rather than moving on quickly from one to another. Fewer discrete finished artworks emerge from this approach but the thinking that goes into the works is deeper and more metacognitive.

The focus on the arc of learning is central to the *art-based research* (ABR) model practiced in the art thinking lab, which foregrounds individual exploration of topics through creative art-based inquiry (see Marshall & D'Adamo, 2011). In D'Adamo's ABR thinking lab, students explore topics of interest to them, and they chronicle their thinking and their creative inquiry process in *research workbooks*. In their books, they mix and match visual imagery with verbal reflections and notes to create a tangible, visual chronicle of their process. Because all of their thinking, information, images, and ideas are in one place, students become particularly metacognitive. They are able to look back to earlier work and see how their thinking and ideas continue to emerge, accumulate, and progress.

### **Clear and Concrete Explanations of Learning**

A rudimentary understanding of learning enables students to recognize their personal abilities and challenges, to identify with other learners, and become more metacognitive. For this reason, D'Adamo familiarizes students with fundamental learning theories of Constructivism, Social Constructivism, the Zone of Proximal Development (ZPD) (Vygotsky & Cole, 1978), and the Theory of Multiple Intelligences (MI) (Gardner, 1983).

Constructivism provides two general suppositions: Learning is a matter of connecting new information to previous knowledge, and learners construct knowledge rather than absorb it (Efland, 2002). By noting the role of prior knowledge in learning, Constructivist theory helps student artists see how experience and knowledge set the stage for their art-based research, and also that the more they know about their subject, the richer their artworks can become. Furthermore, grasping the notion that learners construct their own knowledge prompts students to take responsibility for their learning.

Social Constructivism (Vygotsky & Cole, 1978) explains how learning occurs through social interaction. This helps students appreciate the cognitive value of working together. Vygotsky's notion of the ZPD explains how learning occurs when a person is ready to learn something new. With an understanding of the ZPD, students can recognize when they are in the "zone" and are thus able to embrace and navigate the uncertainty, struggle, and discomfort that often accompany learning. Traversing the ZPD often requires guidance from a more experienced person. When students understand this, they can appreciate the advice they receive from their teacher and peers.

Gardner's MI is valuable to students because it opens up the concept of intelligence to include numerous ways of learning and processing information and ideas. In acknowledging visual-spatial, verbal-linguistic, kinesthetic, interpersonal, and intrapersonal modes of learning, MI supports diverse learners and breaks down conventional notions of talent and intelligence, thus making the art class more inclusive.

Ultimately, knowledge of the mechanisms of learning brings transparency to the classroom. While students examine their own minds, they also come to understand the mind of the teacher and the workings of the curriculum. This sets the stage for student collaboration with their teacher on curriculum and pedagogy.

### **A Common Vocabulary and Language**

Naming and framing specific kinds of thinking establishes the *common vocabulary* to cultivating metacognition (Silver, 2013). This enables students to talk to each other in precise, clear, and

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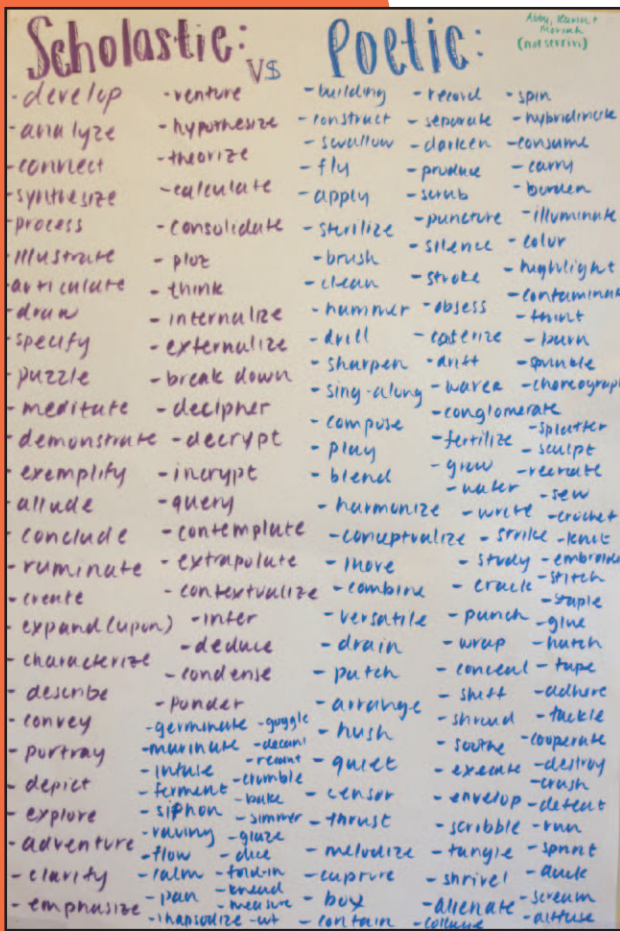


Figure 2. Thinking Words. Class poster (2016).

meaningful ways. Without a shared vocabulary, conversations can be unfocused and superficial. Moreover, a common language builds a sense of community. Just as cultural groups are shaped and bound through a shared language, art classes are, too.

To build a common language, students in the art thinking lab participate in directed scaffolding activities. For example, they brainstorm lists of “thinking words” that include both academic terms for thought, and “poetic thinking words” that describe the abstract thinking involved in creative process in terms of common activities such as cooking or gardening. Tying thinking to hands-on experiences makes the mechanisms of creative process intelligible and meaningful. Figure 2 is a list of academic and poetic thinking words generated by one group of students.

After group sessions, students continue developing their personal lists. Figures 3 and 4 are Petra’s notes on vocabulary and reflections on metacognition.

Many of the kinds of thinking associated with art are also at play in the other disciplines. Students can realize this by working together to develop a list of cross-disciplinary thinking terms. This helps them to see how similar kinds of thinking propel all school subjects while prompting them to appreciate the cognitive benefits of artmaking. Figure 5 is a concept map students drew of the thinking they find in their classes.

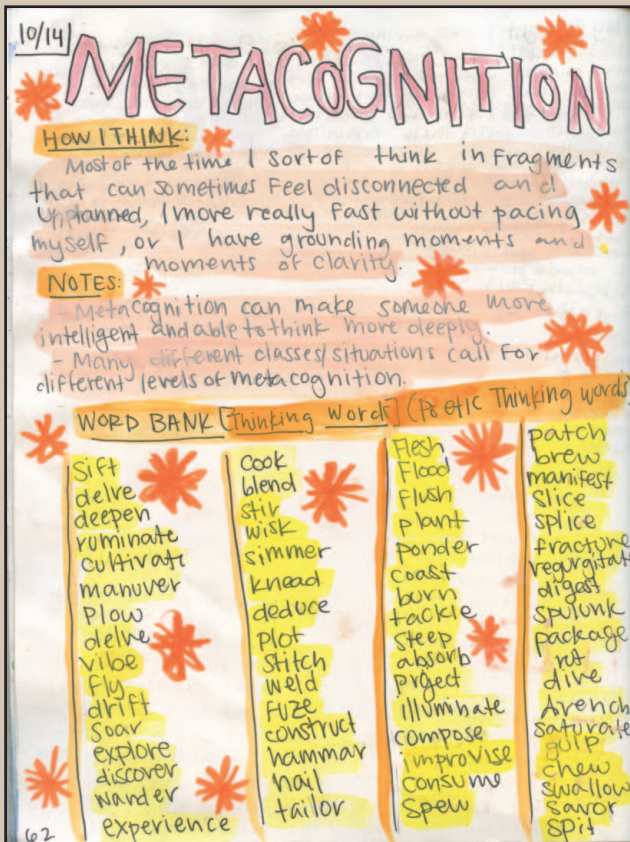


Figure 3. Metacognition and Thinking Words by Petra (2016).

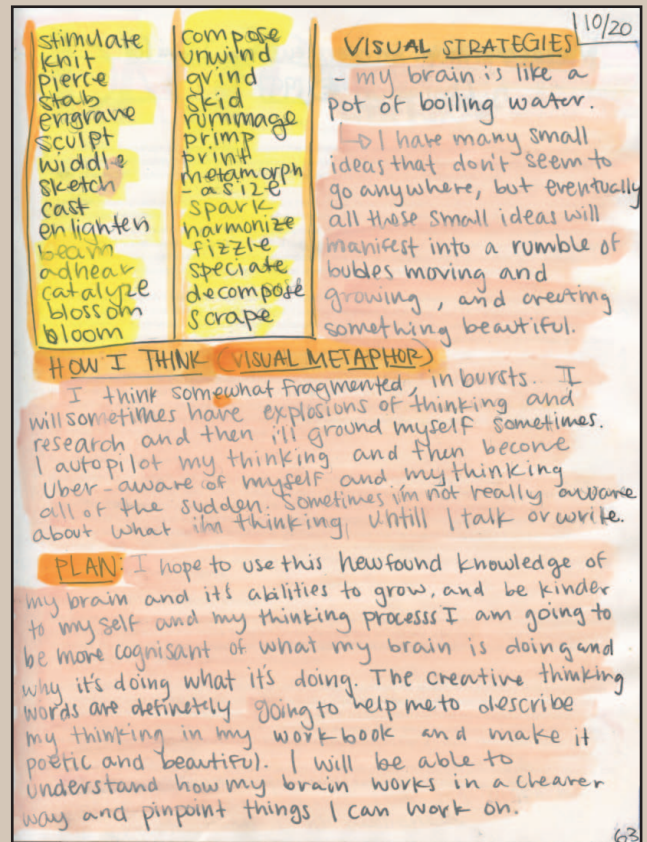


Figure 4. Metacognition and Thinking Words by Petra (2016).





Figures 7 and 8. *Project Runway*. Photographs by Kimberley D'Adamo (2016).

other's skills and ideas. One such collaboration is a version of "Project Runway," a popular TV program in which groups solve design problems in a short amount of time with limited and unusual materials (Figures 7 and 8).

### Small Group Critiques

Ongoing, in-process critiques are a backbone of the art thinking lab. In them, students work together with little teacher intervention. These critiques are essentially looking, listening, and idea-sharing sessions that keep students connected, energized, and on track with their individual work. The tone of these sessions is friendly and supportive. Peers are viewed as *Warm Demanders* (Bondy & Ross, 2008), whose assessment and advice are seen as gifts to the artist. This not only sets a friendly supportive tone, making critiques emotionally safe and non-competitive, but it also gives students the desire to learn from and be inspired by each other. Guidelines for engagement and critique are important to these conversations and it is best if students participate in their development. These rules should identify effective ways to critique and the behavioral expectations for both artist and advise-giver. Figure 9 is Daniela's notes on these guidelines.

### Creative Ways to Reflect on Process

The art thinking lab is where creativity is enhanced by metacognition. The inverse is also true. Metacognition develops through creative work. Beyond naming, framing, and recording creative thinking, students can also look at creative process through an artistic lens. Metaphor, the portrayal of one thing as another (Lakoff & Johnson, 1980), provides one way to do this. A metaphor works well because it anchors abstract notions to known and tangible entities. Encapsulating the essence of process metaphorically enables learners to become metacognitive in more playful, imaginative ways.

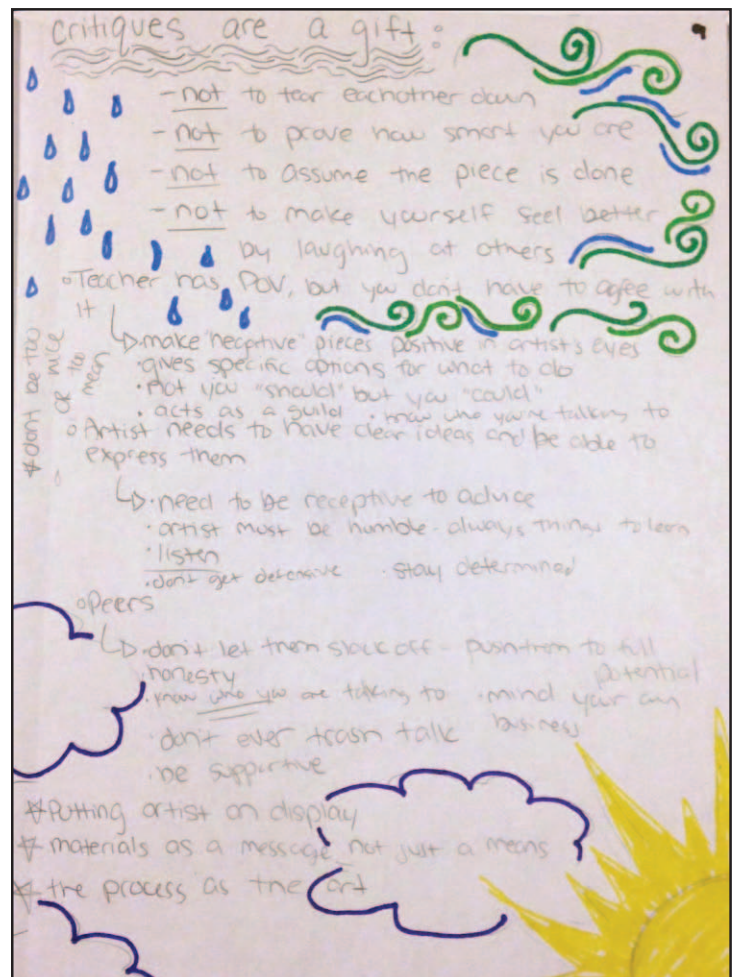


Figure 9. *Notes on Guidelines for Critiques* by Daniela (2016).

Figure 10 is Petra's metaphor for her thinking brain: boiling water. In Figure 11, Molly pictures her thinking as a Banyan tree, while in Figure 1, Noah envisions his thought process as a gumball machine. The differences among these three images and the ideas they convey demonstrate the variety of student perspectives and the many ways we can conceptualize creative process and thinking.

### Likely Problems

The art thinking lab approach is ambitious and unconventional; it flips the conventional classroom hierarchy and tests common expectations of students, administrators, and parents alike. Acceptance of the approach can vary from one context to another. At Berkeley High School, D'Adamo finds parents and administration to be very enthusiastic and supportive. Student resistance, although limited, does occur. Generally speaking, the students who resist the course were highly successful in art classes that stress technical drawing and painting skills. These students come to the art thinking lab with a set notion of art. The shift in focus from technique to concept, content and thinking often obliges these students to think differently about art and the skills it requires.

Eliminating student reluctance must begin on Day 1 with a clear explanation of the art thinking lab and its differences from more conventional art classes. This includes clarifying class expectations and thoroughly explaining the rationale behind them. D'Adamo also recommends establishing relationships with reluctant students and showing appreciation for their technical skills. Another

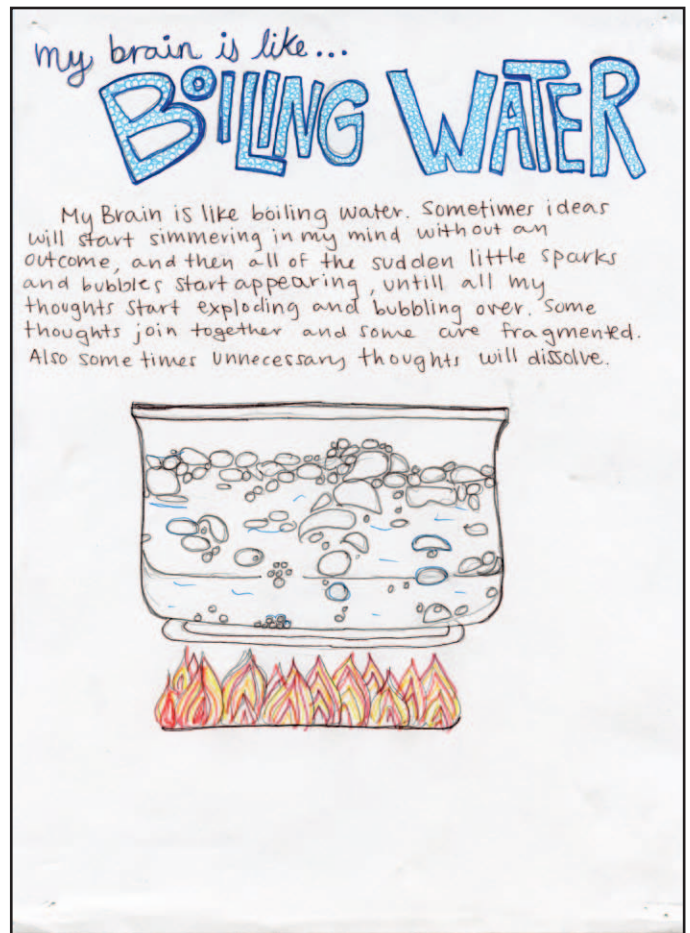


Figure 10. *My Brain Is Like Boiling Water* by Petra (2016).

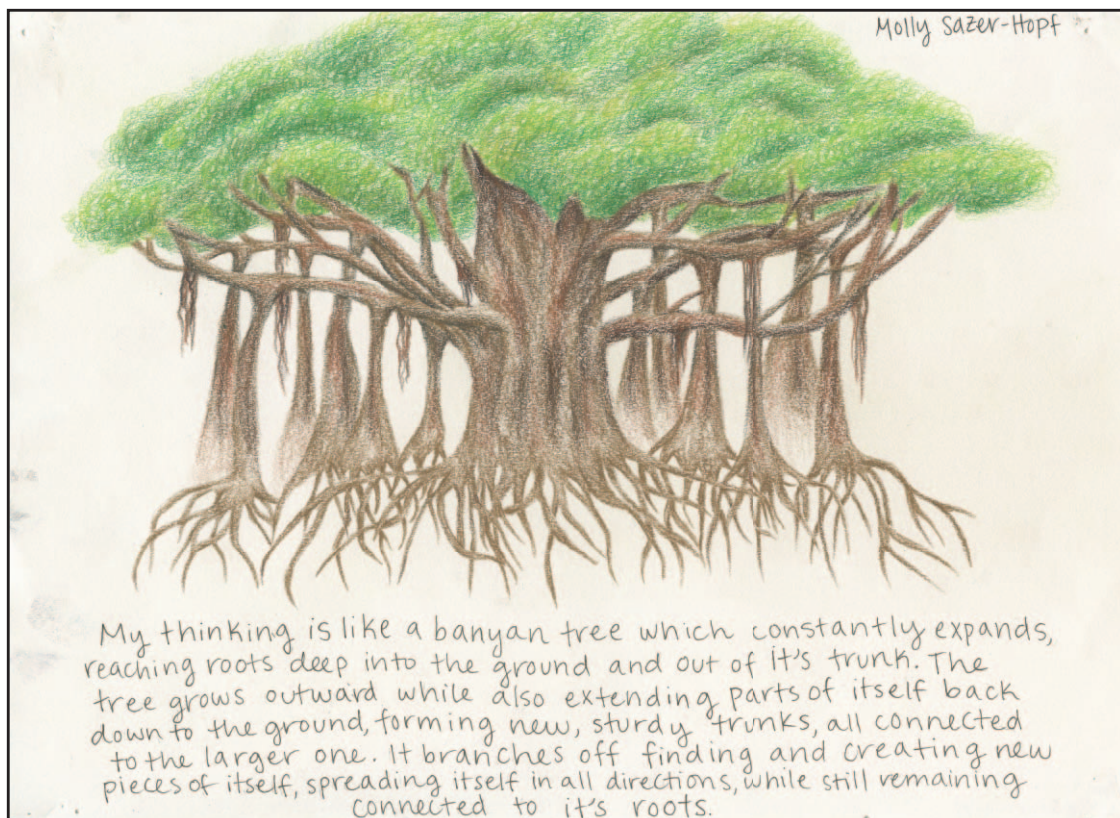


Figure 11. *My Thinking Is Like a Banyan Tree* by Molly (2016).



# The art thinking lab generates an evolving, harmonized assembly of learners who exemplify swarm intelligence.

strategy is citing contemporary art to justify the shift of emphasis to thinking and concepts. Most students respond enthusiastically to contemporary art, particularly art that addresses issues that are edgy and interesting to them. When students see how current art can be timely, meaningful, provocative, and interesting, they open up to new art forms and the thinking behind them. Eventually these students realize that they can apply their advanced technical skills to make conceptually interesting and meaningful art.

Students also may find it challenging to take charge of their own learning. In general, this has not been the case in D'Adamo's class. To the contrary, students find it gratifying to be considered capable of thinking for themselves and directing their own progress. Students may also resist examining their creative process and thinking for fear of impeding their creativity. The authors asked students about this and found students did not express this fear. Indeed, many expressed how being metacognitive helps them to create their artwork, to see themselves as thinkers, to appreciate each other, and to understand the underlying presence of thinking in everything they do. Alexandra expressed these sentiments and more in her reflection.

Learning about metacognition in this class helped me to appreciate the beauty and variety of the ways we think.... I've observed my methods in many environments more closely, especially how I start writing things and where ideas come from, since studying metacognition.... Metacognition could be a valuable tool in dispelling ideas of "smartness" that often create hurtful hierarchies in classes. If we understand that each person has a different way of processing things, we will be able to value our differences better. (Carthar, 2016)

## Concluding Thoughts

The art thinking lab represents an inquiry into how learning and thinking can generate ways of teaching art that link educational imperatives to studio practice and art to its sister disciplines. It is, therefore, an ongoing, evolving experiment with the educational benefits of creative thinking, art-based research, and art integration.

The art thinking lab is also a social experience; individuals thrive in a communal culture of learners that is passed onto and further shaped by new waves of learners. The art thinking lab, therefore, is a site or a pedagogical structure that generates an evolving, harmonized assembly of learners who exemplify swarm intelligence (Rolling, 2013).

It must be noted that an art thinking lab takes careful and thorough scaffolding, flexible structures, and a dogged concentration on what matters. Developing it takes time, a willingness to explore theories and experiment with strategies, openness to students and their ideas, and an embrace of change. While it fosters metacognition in learners, the art thinking lab also challenges teachers to be metacognitive as well. ■

## Author Note

See website for more information and examples: [www.artasresearch.org](http://www.artasresearch.org)

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