

Connecting Creativity to Understanding

Knowledge is crucial—but it's not enough to prepare students for productive citizenship in a complex, fast-paced, and rapidly changing world.

Lois Hetland

Students walk into their 7th grade history classroom where they've been studying the colonial period in America. But what they see in class today looks more like an art studio than a place for research. Desks and chairs have been pushed aside, and a sheet covers a lumpy mound in the center of the room. Colored pencils, oil pastels, watercolors, and art papers are arrayed on the floor, like place settings around a centerpiece. As students enter, their teacher invites them to find a spot where they'll be comfortable for 45 minutes, because once class begins, they won't be able to move—not to sharpen a pencil or go to the bathroom.

Once they're settled in, the teacher gives an intentionally vague directive:

Under this sheet is a group of objects that go together somehow. For the next 45 minutes, while staying in your place and not talking, your job is to represent what you see, using the materials at your place. How you do that is up to you.

The teacher removes the sheet, turns on music, and begins timing.

I used this experience to develop students' appreciation of perspective in historical texts. The still life hidden beneath the sheet was stacked on stools and tables



and was covered by a patterned tablecloth. It was composed of ingredients for apple crisp—apples, a lemon, butter, oats, cinnamon, and sugar—as well as a recipe card and baking equipment, such as measuring cups, a pan, spatulas, and mixing bowls. But the students could only see the side of the mountain of objects that faced them (the recipe card, for example, could only be seen from two or three spots), and they didn't know that the mound was composed of all the elements needed to make apple crisp.

Students had to interpret what they were seeing, as people do when they observe a historical event. Observers see an event unfolding around them, but they have only partial knowledge of what it means. They may only see what's happening near them, get sidetracked by irrelevant details, or be too close to understand the event in full.

In the same way, students, with their partial knowledge and limited viewpoints, had to choose what to represent and how. Rather than assuming that I wanted them to depict the entire array of objects (a default assumption common in beginning drawers), they had to decide what “represent what you see” meant to them.

One student drew a single apple; one focused on the pattern of the tablecloth; one drew an apple pie, choosing to represent the still life as its implied finished product. Later, the students compared their work with that of their peers, viewing the artifacts as documents describing something that happened on this day in this place—as primary sources.

As students reflected together about their drawings, they began to



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see primary documents and historical texts anew. Texts didn't tell the “truth”; instead, they told stories from unique “positioned” points of view. These primary documents became pieces in a puzzle. Students experienced how all interpretations are inherently biased and can only be understood in the context of those who created them. One or another of my former students occasionally finds me and tells me that the subject

“history” changed for them that day—from memorizing dates and names to creating and interpreting stories of the past on the basis of careful comparison of multiple documents.

Educating—For What?

Are these students developing new ways of thinking about and understanding history? Are they acquiring creativity of the sort worth developing, either in general or for budding historians—and who decides? These questions go to the heart of what education is all about.

Let's begin by tackling the term itself. Creativity can be a confusing topic because people address many different ideas with this single word. Lately, “the creative economy” is in common parlance, but creativity traditionally evokes other asso-

ciations, including creative genius, creative insight, creative classrooms, or references to God the creator. The broad use of the term makes it difficult to focus conversation about creativity as it relates to schooling.

Thankfully, Kozbelt, Beghetto, and Runco (2010) summarized research on creativity and identified four ways it's been studied—in terms of creative *products* (the iPhone or Google); *persons* (Steve Jobs or Maya Lin); *processes* (the collaborative, iterative process of design thinking); and *places* (Silicon Valley or an artist's studio). My own interest in an education for creativity centers on three of these four ways: on nurturing creative persons through creative processes in creative places.

Tying such an education to a creative economy is fine with me, as long as the tail doesn't wag the dog. Education's purpose is not just to produce workers, even though it used to be;

many schools were designed during the Industrial Revolution to fill factory jobs and keep workers' children off the streets. But schools have the potential to serve as incubators for creative and ethical people who can shape our futures, such as the "good workers" whom Gardner, Csikszentmihalyi, and Damon (2001) describe in their work.

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should we move toward educating for creativity—or something else?

From 1989 to 1996, Project Zero and the Harvard Graduate School of Education conducted research around the development of *disciplinary understanding* as education's goal, a legacy from Jerome Bruner's work from the 1950s (Bruner, 2006). The definition of understanding developed in that project leads us one step closer to educating for creativity.

it's easy to lapse into a sense that understanding is something to *have* rather than something to *do*, genuine understanding suggests a more dynamic set of higher-order relationships with the world.

Understanding and Thinking Dispositions

Understanding and thinking are closely tied. Thought builds understanding—and people can aim thinking at some intention. But when the researchers looked at previous findings about skill in thinking, the findings showed that teaching thinking skills, such as logical approaches to problem solving, is not enough to create understanding; skills taught in isolation are as inert as their knowledge-fragment cousins. Students who learned such approaches or strategies rarely used them when confronted with unfamiliar challenges. There's a transfer problem—a problem of application to novel circumstances.

In response, Perkins and colleagues developed the idea of *thinking dispositions* (Perkins, Jay, & Tishman, 1993; Tishman, Jay, & Perkins, 1993). Skill in thinking needs to be tied to attitudes that motivate and connect thinking to purpose. Otherwise, skill spins its wheels without going anywhere. So, to educate for understanding, educators have to nurture two other elements of dispositions beyond skill: *inclination*—the drive, need, or passion that pushes people to use their skills—and *alertness*—the sensitivity, awareness, or recognition of connections among the bits of information that constantly stream past us.

That begins to sound something like creativity, does it not? Understanding, in the performance sense, uses knowledge for a novel purpose, with thinking dispositions as the engine and fuel for getting there. Perhaps educating for understanding is educating for creativity?

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endeavor to shift the weight of schooling's work-related legacy and reframe schools as places to aim for the higher cognitive processes of creative and critical thinking.

Defining Understanding

Schools often seem to default to a vision of education as knowledge acquisition, which the fervor for testing has only exacerbated; students "succeed" when they can reproduce knowledge on demand from memory. No one should belittle the importance of knowledge—it's an essential component of wisdom and raw material for constructing what society needs and values. But if education focuses primarily on knowledge acquisition, students are unlikely to learn to behave as democratic citizens must—that is, as active, informed, ethical participants in shaping our collective futures.

If students are to emerge from their educations with those qualities, then we must shift away from knowledge acquisition as the measure of success. But

Understanding and Performance

Understanding—defined by this research as performance—is the capacity to use what you know flexibly in response to novel circumstances (Blythe & Associates, 1998; Wiske, 1998). That definition harbors two advantages over knowledge acquisition as education's goal. First, understanding so defined activates knowledge. For example, history is not just historical facts—dates, sequences, names, and events—but, rather, a set of lenses for *interpreting* multiple and complex causes and effects to explain past and present conditions. Second, by aiming schooling toward understanding, learning takes on the character of being *for* something. Students must learn to use knowledge to achieve an intention—for instance, to address the challenges of an unknown future in a time of rapid change.

The researchers found that the performance view of understanding is what most people mean when they say they really understand something. Although



Understanding vs. Creativity

As I began pondering connections between understanding and creativity, I talked with David Perkins about it. “Creativity,” Perkins said, “is transgressive.” On the other hand, understanding—that is, performed understanding using disciplinary knowledge and thinking dispositions—is what experts do within accepted domain boundaries.

Developing such expertise and understanding in the various domains is certainly a rigorous and worthy goal for education. But that’s not educating for creativity. Educating for understanding doesn’t expect or require boundary breaking; it merely requires the use of knowledge and skills in new situations.

For example, when addressing the problem of slow elevators in tall buildings, an expert (and expensive) solution might involve understanding the mechanisms that move the cars to improve their efficiency. But by breaking the boundaries of the problem and seeing it not as an engineering problem but rather as a *perception* problem, we might come up with the solution of installing mirrors outside the elevators. People tend to be distracted

by their own reflections and, as a result, may not even notice how long they have to wait for the car to arrive.

Creativity, at its core, pushes against the edges of the known and bursts open new perspectives, shifting the sense of what is possible or even real. I am reminded of the creative legacies of Paulo Freire (1996, 2005) and bell hooks (1994), who envisioned transforming education’s role to a transgressive intent: to oppose oppression and move toward liberation. Creativity makes new things and makes old things new—new problems, new solutions, new realities—things not conceived before. It is, as Perkins (1981) defined, “adaptive novelty.”

In today’s world of instantaneous global communication and change, the unknown is always showing up. Schools that aim to prepare students for that world educate students to respond wisely in the face of the unfamiliar and new.

Enter the Studio Habits of Mind

Although the arts are in no way the sole repository of creative practices, they are a rich archive of all four categories of creativity—processes, persons, places,

and products—that can be mined to educate for creativity in any subject area. My research with colleagues from Project Zero (Hetland, Winner, Veenema, & Sheridan, 2007) produced a representation of the artistic mind that we call the Studio Habits of Mind. These eight studio habits that artists engage in are to (1) Develop Craft, (2) Engage and Persist, (3) Envision, (4) Express, (5) Observe, (6) Reflect, (7) Stretch and Explore, and (8) Understand Art Worlds. Artists and educators have used these eight habits across all disciplines, most recently in conjunction with the Common Core State Standards.¹

All the studio habits work together. For example, take Stretch and Explore, one of the habits most readily associated with creativity. We define Stretch and Explore as “learning to reach beyond one’s capacities, to explore playfully without a preconceived plan, and to embrace the opportunity to learn from mistakes and accidents” (Hetland et al., 2007, p. 6). Combined with Develop Craft, for example, which focuses on learning to use tools and materials, Stretch and Explore highlights playful exploration of implements and mediums. When students combine this habit with Engage and Persist, they stretch to find work they’re passionate about and novel ways to persist in its resolution.

Stretch and Explore:

A Closer Look

To see how the lens of Studio Habits highlights creative practices—and to clarify what this would look like in the classroom—let’s consider three elements of Stretch and Explore—play, learning from mistakes, and embracing opportunity and taking risks.

Play

Exploring playfully emphasizes the importance of learning experiences that encourage what may appear as oxy-

moronic—habitual divergent thinking. Building in low-stakes and low-judgment formats frees students to playfully explore by enabling them to have fun, wonder, follow feelings, improvise, and work from intuition.

The opening example of the history lesson drew on the playful element of Stretch and Explore by bringing unfamiliar materials into the history classroom (paints, colored pencils, food, baking equipment); removing some expected materials (books, desks); setting up a mystery or game with new rules (“I’ll sharpen your pencil for you—but you have to stay in your place”; “The objects go together somehow”); and using open-ended directions (“Represent what you see”).

It’s easy to use play as a way to regenerate enthusiasm for inquiry in any subject with students of any age. I’ve seen kindergartners play with “how many ways” they can alter cardboard in an art class, high school students play with mirrors and lenses in “what if” scenarios in science classes, and middle school students role-play dialogues around the qualities of literary characters. In museums, too, I’ve seen people role-playing with a partner, with one speaking as the viewer of the work and the other speaking from the work’s point of view. Playful! When we relax, we see novel possibilities to explore and develop.

Learning from Mistakes

Ask a student about making a mistake, and he or she is likely to look silently at the floor. Mistakes in school are viewed as shameful and to be avoided—people might think you’re dumb.

But in the arts, mistakes have an entirely different role. First, artists know that mistakes are inevitable. How can people avoid error when they’re pushing deliberately beyond what they know and can do? Second, mistakes are

valuable. Reflecting on mistakes often leads to useful insights that signal what went wrong and that suggest a different, more effective, approach. For example, when drawing a face, a student might get the proportions wrong and then notice that when one side of the face is larger, the face appears to turn to the side. A mistake in representation then becomes a tool for modeling expression by using distortion deliberately.

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Finally, mistakes are a potential source of ideas for new projects and investigations. A mistake may expose unusual juxtapositions, surprising metaphors, or tacit knowledge. For instance, when making a collage, an artist noticed that a magazine photo of meat looked like the texture of wood. She then used images of food to construct a series of architectural interiors in collage that were puns about consumption.

In the apple crisp lesson, “mistakes” were the norm. Remember that student who drew a single apple? Or the one who focused on the pattern of the tablecloth? These works showed what each student saw and chose to draw from his or her perspective; a traditional drawing class might consider these representations as errors, as though the task were to accurately depict the entire arrangement. Some students worried about “not being able to draw,” but when we shared the works, which were unfinished (further lowering the stakes), the students got to say what they were trying to do and point out places they felt good about and areas that “bugged them.” Success wasn’t about drawing—

it was about gaining insight into history through an artistic game.

“Make 50 visual art mistakes”: This is what John Crowe, a professor at the Massachusetts College of Art and Design, tells students to do in his studio course. This “50 losers” assignment gives students power over error and freedom to explore without worry. What happens? They play! After giving students plenty of time to follow that

direction, Professor Crowe extends the challenge: “Now, elevate one of these mistakes to the level of art.”

For example, when cutting wood imprecisely with various tools, an artist noticed how interesting the random chunks of wood were that had fallen to the floor. He combined selected scraps into a prototype for what became a line of beautiful table lamps in a rough, Japanese aesthetic. Students come to use error as opportunity; it gives them permission to explore broadly and without negative self-judgment.

Embracing Opportunity and Taking Risks

Combining play and the value of error leads to greater confidence in approaching problems without fear and taking the risks needed in the search for new ideas. Artists often embrace risk by setting up constraints on their skill, such as using brushes attached to three-foot dowels or mixing weeds or chunks of wood into their clay. This habit of building in chance and randomness emerges from a confidence that emphasizes serendipity and recognizes

that previously developed skill may hold back exploration and that using only proven methods may limit opportunities. Artists know there's usually time to refine their work, so the risk isn't really dangerous. Taking a chance is safe when the work is held lightly, tossed about, investigated freely—and not seen as precious or fragile.

The apple crisp lesson used this element of Stretch and Explore by assigning the risk: It didn't matter what students could or couldn't do; they just had to take on the chance and represent what they saw. No, this work wasn't graded. Students had to engage and do something. Then we used the experience to learn from the effort.

Similarly, artists may spend hours on a drawing and then cut it up into parts that they reassemble as another work. Writing teachers may have students cut out descriptions of characters, objects, or settings from early drafts to combine in odd juxtapositions or metaphors that catalyze new insights.

It's also a risk to show work to peers or teachers, especially before it's completed. But public critique is common practice for artists. Mid-process critiques might ask others to describe what they see in the emerging work while the artist says nothing and takes notes to reflect on later. Ultimately, exhibiting a finished work to the public—to classmates, online, on a city street, in a gallery, on the radio, in a newspaper or publication—provides a sense of letting the work go to live its own life, separating the maker from the made and allowing a more objective appraisal of the work's quality. Such practices must not be limited to art classes.

The Ultimate Exploration


We turn, finally, to the idea of transgression. That's the ultimate exploration and stretch—to push past what we know to be quality, to be right or

worthy, to trample those boundaries in search of new connections, possibilities, insights, and perspectives.

The apple crisp lesson modeled thinking outside the boundaries of what students thought of as history. It transgressed the discipline, but it wasn't a revolution—just a nudge beyond the expected. In contrast, the works of Paulo Friere and bell hooks lean toward a fundamental transformation of schooling as the mechanism for reforming society's inequities. So the

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transgression of creativity can be as simple as pushing the desks and chairs aside, having students draw in a history class, and suggesting that the textbook may not be the final word or that "truth" is not the goal of history, but rather an interpretation based on evidence. Or it can be as profound as turning education inside out.

Whichever tack toward transgression educators take, we need to help students recognize that what's now the rule was previously invented by other people and that they, the students, can begin to participate in the process of creation themselves, practicing how to shape their own destinies. And that's what an education for creativity is for—creating the creators who, from the present and past, make the future. 

¹The foreword to the second edition of *Studio Thinking: The Real Benefits of Visual Arts Education* (Teachers College Press,

2013) explains the connection between the studio habits and the Common Core State Standards.

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