Depth of Field/Depth of Understanding
Finding the Emotional Connection

ERIC BAYLIN
Packer Collegiate Institute, Brooklyn, New York

When we educators fail to appreciate the importance of students’ emotions, we fail to appreciate a critical force in students’ learning. One could argue, in fact, that we fail to appreciate the very reason that students learn at all.

In the summer of 2008, Packer Collegiate Institute, a K–12 independent school in Brooklyn, New York, hosted a workshop with neuroscientist Mary Helen Immordino-Yang from the University of Southern California to learn about and work with her recent compelling research on the fundamental connection between emotion and cognition. Through our engagement with her ideas and work over the three-day workshop, it became clearer and clearer that without understanding and addressing the emotional lives of students in our day-to-day work, we are necessarily limiting what and how students learn. Knowing exactly how to translate her research into classroom practice, on the other hand, remains an open question. This article explores my efforts to put into practice during the following year some of what I learned.

As a teacher I know, even without the benefit of research data, that certain emotional states, such as fear and anxiety, can have an impact on a student’s learning. When I ask a question and see that telltale nervousness in a student’s face, I also see a mind that is temporarily frozen. Learning for the moment has shut down. Immordino-Yang contends, however, that the relationship between learning and emotion runs much deeper than we normally think, that on an evolutionary and biological level, the emotional brain is completely bound up with higher cognitive functions. In her presentation, she defined emotion in this way: “Emotions are packages of behaviors and cognitive strategies that are automatically triggered in certain
contexts, either real or simulated.” In this framework, thought is triggered by emotion and is not a separate and purely cognitive function. She refers to this integrated process as “emotional thinking.” I am still trying to wrap my head around this definition, given my lifelong habit of separating emotion and thinking into two distinct packages.

At the heart of her research is clinical evidence that underscores the fundamental importance of this connection. She cites a group of patients whose brains have been compromised in particular areas by disease or injury, who seemed to have lost their “emotional rudder,” as she refers to it. While still capable of thinking in rational ways, their decisions often lack social appropriateness, for example, not knowing right from wrong. Despite their intact ability to define acceptable behavior while in a laboratory setting, these patients are unable to act accordingly in normal social settings (Immordino-Yang and Damasio 2007, 5).

This observed disconnection between thought and emotion, and the resulting lack of transfer into a real-life context, has led her to hypothesize further that emotional processes are equally fundamental to the transfer of learning from an educational setting to real-life contexts. A student might, for instance, learn information and skills in a school setting, but if the emotional “trigger” is one that does not run very deep—for example, “I need to learn this to pass the test tomorrow”—then the staying power of that learning and the ability to transfer it into a new situation also lack depth. A stronger emotional trigger might be: “I need to learn this because it relates to other things in my life that interest me.” Then presumably the “emotional thinking” will happen on a deeper level, with more likelihood that transferable learning will take place. Failing to understand and to acknowledge this fundamental connection, and trying, as we often do, to separate thinking from emotion, compromises the very act of learning itself (Immordino-Yang and Damasio 2007, 9).

The scope and depth of Immordino-Yang’s presentation was nothing short of breathtaking for me, as her science aligned with something that I had always believed as an educator of many years and especially as a teacher of art: that education must address more than the logical thinking mind by tapping into deeper levels of experience. Typically, when I say “deeper” I also gesture toward my heart, suggesting that “deeper” is somehow grounded in physical, emotional, or even spiritual states. I wasn’t prepared, though, to say what “deeper” might mean in neuroscientific terms. Truly understanding her research, particularly her definition of emotion, and
finally trying to translate her findings into practice has proved to be both challenging and enlightening.

As part of the workshop we were asked to come with a teaching problem or dilemma that we could examine in the light of her research. In fact, Dr. Immordino-Yang specifically invited us to join her as co-researchers, in a sense, to test out some of what she was discovering in her work. She emphasized that the research in isolation was of limited value unless it confirmed what good teachers already know and do intuitively. The value of research, of course, is that it can render with more clarity and precision some of what underlies good intuitive teaching. The melding of the two will eventually provide a more explicit rationale for good practices and ultimately more finely crafted tools for creating effective learning.

The phrase “good, intuitive teaching” suggests to me those times when a lesson I have designed—one borne out of my instinctual knowledge of my students, my subject, and myself—hits home with a group of students, in the sense that they seem deeply engaged, not only on an intellectual level but in ways that call forth more personally significant responses. One simple photographic assignment that I give in the early weeks of a beginning photography course is entitled “Jump,” in which students are asked to photograph a person or a group of people in the act of jumping. Embedded within the assignment is a lesson about the technical use of the camera and, more importantly, one about appreciating the camera’s innate capacity to freeze a moment in time, a fundamental aspect of still photography and an important one for students to practice and learn. I knew that if the lesson were to grab them, it had to be about more than the function of the camera. The idea of jumping came to me one day with an immediate sense of its rightness—just as intuitive images and thoughts often do—and I recognized it as subject matter that might rivet them to the moment in possibly exhilarating or dramatic ways.

The intuitive hunch is itself worthy of our attention, perhaps an essential form of emotional thinking. In fact, Immordino-Yang places a high premium on developing “skilled intuition” as an aspect of the emotional component of the learning process. She defines intuition from a neuro-scientific perspective as “the incorporation of the non-conscious emotional signal into the knowledge being acquired” (Immordino-Yang and Faeth, forthcoming, chap. 4). In my case the answer “jump,” the nonconsciously emotional signal, came not through a carefully reasoned process; yet it emerged with intellectual clarity and wholeness as though the years of thinking and experience that had led to it were synthesized and gathered
as leverage for a single moment of new understanding. The mental clarity of that moment was melded with an almost physical sense of the answer’s rightness, as though the final piece of the puzzle had been discovered and then slipped into place. And accompanying that newly discovered sense of the whole was the feeling: “Aha, complete, perfect.”

My hunch about that lesson has been borne out over the years by the wealth of my students’ imaginative images that have far outdistanced my initial expectations. They have experimented with camera angles to exaggerate the action of the jump, and cajoled groups and jumpers of different ages to join in the act. They have placed their jumpers in unlikely locations or found something in the environment to accent or inspire the jump. In one photograph (see fig. 1), the photographer, a sophomore girl, asked her friend to reenact the gesture in the poster. Her jump, in turn, created the remarkable shadow that mimicked the original image. In responding to the assignment with combined intelligence and exuberance, the student was engaging in her own emotional thinking and simultaneously understanding the power of the camera to grab an instant out of the flow of movement and to infuse it with her layered experience of thought and emotion.

Fig. 1. "Jump," by Nellie Ochs, taken in her sophomore year at Packer Collegiate Institute, 2007.
In following my knowledge of adolescents and my gut level requirement that an art lesson be grounded in genuine experience, I arrived at the lesson intuitively; and it was “good” in that it harnessed their enthusiasm in intellectual and creative ways. Correspondingly, in the context of Immordino-Yang’s research, the assignment seemed to touch the students’ strong emotional trigger and to engage them in the sort of emotional thinking that results in meaningful, transferable learning.

On the other hand, the subject of depth of field from my work as a photography teacher had never elicited a “good intuitive” lesson. Instead, it had always proved to be a dilemma and the one that I chose to bring to the workshop. It was a topic that I considered small, manageable, and relatively concrete in comparison to some other issues that troubled me. Basically “depth of field” refers to the area of a photograph from the foreground to the background that is in focus. Simple enough, it would seem; although the process for achieving a desired depth of field begins to get a little more complex. In my 15 years of teaching high school photography, I had never been satisfied with how I was teaching the concept because even the brightest students did not truly understand that it applied to every photograph they took; nor did they use it in personal or interesting ways. I brought the topic to the table fairly innocently and unaware of the can—or, more pointedly, the Pandora’s box—I was opening for myself.

The problem for me lay in the nature of the topic itself. It was basically technical information and as such, a necessary evil in a sense, something that I had to teach. I approached teaching photography as an artist and only begrudgingly as a technician. I basically held my breath for the year in hopes that equipment would operate without breakdowns and that students would not bring in their parents’ fanciest cameras with the expectation that I would know the function of every button and dial. Likewise, teaching depth of field was something I balked at and even left out of the curriculum a few years to give myself a rest. There had been no intuitive “aha” moment as with “Jump,” when the technical side of the topic had been subsumed within an emotionally engaging subject. Yet the bottom line was that any first-year photography student should know this how-to chunk of information in order to have more control over their picture taking.

One of my approaches to teaching depth of field had been to set the information to a rhythmic, interactive talking song that required them to repeat the definition over and over. Basically I felt that if I could entertain
them as they learned, the dose of necessary information would go down more smoothly. In a call-and-response fashion they had repeated:

It’s the area in focus from front to back
It’s the area in focus from front to back
Front to back front to back
It’s the area in focus from front to back.

I have found over the years that the song was indeed entertaining, but there was little retention even after they had repeated the definition numerous times. When I asked them for the definition, they would typically fumble with reframing the words of the song. Few if any would ever repeat the actual lyrics, which is originally what I had in mind, thinking that repetition equaled understanding. It was probably to their credit that they were at least trying to put the definition into their own words instead of parroting back mine.

I persisted with this entertaining method of presentation for years. Sooner or later, I thought, a bunch of smart students would just get it and confirm the usefulness of my innovative methods (which in hindsight were just a whimsical remnant of a traditional form of rote learning). You could also say that my persistence with an unproductive teaching method was something worth examining. Better late than never. So I brought this topic to the table of the brain research workshop thinking that it would be a manageable one to resolve. I just needed to be more creative in my approach.

From the start of her talks Immordino-Yang emphasized that the emotional brain was wired into the whole system of learning and could not be divorced from cognitive functions. This was not a matter of choice but one of biology. The only matter of choice was whether we, as adults, would choose to understand and to honor the way our students’ brains truly functioned. So what emotional component was there to the subject of depth of field? How could I engage them with this dry topic?

First, I grappled with the notion of emotion in neuroscientific terms. Immordino-Yang, in teasing out her definition of emotions as “packages of behaviors and cognitive strategies,” explained that emotions were more than a variety of feelings as we might typically think. Some quantifiable aspects of emotion are the measurable physiological manifestations that accompany feelings, such as a shift in pulse rate, sweating palms, warmth in the body. Beyond these outer manifestations and more fundamentally, she spoke of emotion as having a basic evolutionary function in helping a person survive and flourish and that this deeply ingrained emotional func-
tion was necessarily interwoven with higher-level thinking (Immordino-Yang and Damasio 2007, 3–4). I am still working to understand emotion in neuroscientific terms, but it gets clearer the more I study it.

In relation to my dilemma I was first drawn to thinking about the physical aspects of emotion. Given that emotions are so grounded in the body, it occurred to me to have the students physicalize the concept of depth of field, that this might engage their emotional selves. If they could feel and sense the concept through their bodies, they would have a more visceral connection to the information and perhaps more understanding and ownership.

So I devised this playful physical enactment of depth of field: First I would teach them the “technical” part about how the camera created shallow or large depth of field. Basically depth of field is a function of the camera’s aperture, the variable opening that allows light to enter and strike the film. When reduced to its smallest size, the aperture creates images with a large depth of field, and when widened to its largest opening, it creates images with shallow depth of field. Proximity to the subject is also a factor. (The why of this I had carefully avoided after my initial years of facing blank looks when delivering an unconvincing and not too well informed rationale. Just trust me. It happens this way. You don’t have to understand how an internal combustion engine works in order to drive well.)

So first I planned to teach them to embody becoming a large aperture with arms in a big “O” or a small aperture with thumb and forefinger in a small “o”. Then some of the students would line up in a row facing a student “photographer” at the head of the line. The photographer’s role in this enactment was first to physically indicate large or small aperture. Students in the row would correspondingly be focused or unfocused. For example, to physically enact shallow depth of field everyone in the row would appear spacey and unfocused except for the one person whose name would be called. That person would then stand with rapt attention, looking at the photographer who would “snap” a picture. And similarly, with a small aperture and large depth of field, everyone in the row would focus completely on the photographer, all eyes engaged. No one would be unfocused or staring off (my ideal class!). Half of the class would watch, so they could see the effects of a large or small aperture in the row of their classmates. Even as I write it down I can see that it was a little complicated—a few too many steps? But it was fun and I knew that I was onto something. I couldn’t wait to try this out the following year.
As we delved more into the cognitive aspects of learning in the summer workshop, it became apparent that there was still more to the problem. Embedded within the concept were some conceptual stumbling blocks. For example, the term “field” did not name with accuracy what they needed to learn. What “field” exactly? A baseball field, a cornfield? There needed to be some definitions or clarifying of terms, a building of smaller conceptual steps that would lead them to a more complex idea. This understanding derived from the theory of cognition we were learning that complex ideas were built from the assimilation of smaller, more basic ones. So why hadn’t I thought of that? Field seemed clear enough to me. The solution, though, seemed self-evident. If I substituted “area of focus” for “field,” then things would make more sense. I was quite sure they understood the word “focus,” at least in concept if not in practice! So we would name this, first of all, the “depth of the area of focus,” a mouthful but more to the point.

Then it occurred to me: rather than actively teach the concept, I should let the students first be absorbed in the experience of looking at photographs that embodied the concept of shallow and large depth of field and allow the lesson to unfold from there. My role as the teacher in this case was not the one who explains, but the one who thoughtfully constructs an experience that offers possibilities for discovery. I have come to see that my explanations—no matter how compelling—are often less effective than the students’ own messy grappling with the subject and making the effort to figure it out on their own. In retrospect and given the way that much of my teaching had evolved in the last few years—to hand more of the responsibility for learning over to the students—this seemed like the most obvious direction of all.

Why hadn’t I come up with it sooner? The block in my thinking had a great deal to do with the problem itself. This was a piece of technical “have-to-teach-it” information that I personally did not relate to in any sort of emotional way. I felt no visceral connection to it on my part. It was just something that any photography student should know and that any good photography teacher into his second decade of teaching the subject should know how to teach! Now, at least, I had a plan and new energy for approaching the subject.

So the time arrived in the curriculum the following year to once again introduce depth of field. I had my new methods: looking at examples that embodied the concepts, the physicalization of the aperture and area of focus, the clarification of terms. I decided that I would not abandon the song, but instead of starting with it, I would end with it after they had
begun to grasp the concept in other ways, more like dessert than the main course.

I was very excited to try out my new ideas, especially the spacing-out/stand-at-attention lineup. I started out as I had planned, by showing them a carefully selected group of pictures with shallow depth of field and asking them to identify what was common about the images. I sat back through this portion as they sorted through the photos and discussed with a partner what they saw. I asked each pair then to share their findings with the group. They typically noted that part of the photograph was in focus and part was not. That task was fairly easy for them and they seemed to be relatively interested. There was an element of solving a puzzle, which was in itself intriguing; and just the act of looking at pictures in a slightly different way caught their interest. All I was asking them to do was to identify the common aspect of shallow “area of focus” without having to officially name the experience.

At this point in the lesson, I felt as though I were more aligned with Immordino-Yang’s research as well as with my own best intuitive sense about teaching that leads to effective learning. In asking them to look, think, and wonder with only minimal direction, they were more actively and emotionally engaged. In allowing the pictures to speak for themselves rather than my being the interpreter, the process invited more ownership in discovering what I could easily have pointed out. And even more important, they expressed interest in how to take such pictures, leading us directly to the rest of the lesson.

Then I shifted to the technical part of the lesson and my more active role of teacher as provider of information. I first explained the function of the aperture in relation to deep and shallow focus. And of course the highly adept technical student asked why. At which point I said: “Truthfully, I can’t give you a good explanation that won’t confuse you even more. But if you figure out a way to explain it to the class, please let me know.” (With age comes some wisdom, and with wisdom some humility. And so much for provider of information.) Most, of course, were happy not to have to go that technical route.

I then taught them the physical gestures for demonstrating large and small apertures. And now for the part that would nail it for them, the lineup. I had half of them stand in a line with one as a photographer at the front facing them. The other half of the class stood and watched. I was on edge with excitement because they were truly going to get it this time. The only thing that I had overlooked—and what proved to be a
strong emotional trigger embedded in my lesson—was that teenagers hate to be embarrassed. I had tried this exercise out with a bunch of willing adults at the summer workshop. They laughed and had fun with it, and several acknowledged that they had really gotten the concept through this exercise. However, adults and adolescents, while often the same height, are in other ways different species. The students were squirming and clearly not comfortable with my directing them in this physicalizing game. It had not occurred to me that one goal in adolescence, this heavily peer-oriented age, is to always appear well in the eyes of others, not to do or say anything that could be deemed foolish or embarrassing, especially in a group that included sophomores, juniors, and seniors. For young people who were not yet comfortable in their newly grown bodies, this exercise was primarily one thing for them—a huge source of embarrassment. “This isn’t helping,” one student said. Her impertinent words only fired me up to pursue it with even more embarrassment-stirring energy. I had been thinking about this lesson for many months now. It was part of my own research and students were not about to ruin it! I bludgeoned my way through the lesson demanding participation and understanding, neither of which was forthcoming. Finally we got to the song—with a little trepidation on my part. At least they seemed to enjoy it, though again with little evidence of learning afterwards.

I cooled off over the next day and regained some of my humility. To honor the research aspect of my venture, I gave them a feedback sheet to fill out about the lesson. The feedback confirmed that the physical enactment part of the lesson had indeed not been very useful, and in fact was mostly embarrassing.

As in most things, failure often opens the way to more fruitful thinking and action. It was after this fiasco that the real lessons started to emerge for me. I had missed the point again. I was still trying to teach just a concept, albeit in some interesting innovative ways. But I still had not really approached the topic myself in ways that were emotionally engaging.

At this point I began to step back and take another look at the images I had shown them and to ask myself, what is interesting about these images? Not just, how were they made? And that is when I began to connect. I distinctly recall taking a second look at the image of singer Jimmy Scott by Roy DeCarava, who had long been one of my favorite photographers (see Galassi and Turner DeCarava 1996). I had selected it simply as another example of shallow depth of field and in my limited mindset about the subject had overlooked my own emotional connection to the image. The
failure of the lesson had somehow shattered a barrier in my thinking, and I saw the image in a totally new light, not simply as an example of shallow depth of field but as an engaging image that derived its power from the contrast of sharp and soft focus. In the photo, the singer’s hands are rendered in crisp detail in the foreground and immediately draw the viewer’s attention. The clarity of his clasped fingers and the upward reach of his gesture suggest the powerful feeling of his music. His face, more typically the conveyor of emotion, instead emerges slowly and secondarily from its out-of-focus status in the background. Through his imaginative use of shallow depth of field, DeCarava has turned the tables on us and invited us to explore the image in a measured way that adds dimension, depth, and emotional power to the experience of looking.

I then turned to the other images I had shown as examples and saw how the blurred sections variously create an air of mystery or tell a story. In a second photograph, DeCarava focuses on a man in the foreground leaning against a pole (see Galassi and Turner DeCarava 1996). After a moment of looking one discovers another out-of-focus man across the street who is mirroring the gesture of the first, a subtly amusing moment drawn from the vernacular of the city street. Again, the differences in sharp and soft focus create a dynamic of looking that allows for sustained engagement and discovery, more so than a similar image with sharp focus throughout. As I studied the images more and thought about my own process of seeing, I began to understand in a more general way that the selective focus of the lens begins to approximate more closely our own ability to select out details to focus on, though our mental capacity to give our undivided attention to a detail is far more subtle than a camera’s. Often when I ask a student why they had taken a certain shot, they point to a small detail in the photograph and say, “This is what interested me.” With the camera set on a small aperture and the resulting large depth of field, that detail would be completely lost in a sea of details. But the photographer in his or her mind had selected it out as important. By using shallow depth of field the student could isolate a detail in a somewhat similar way that we do with our minds, and the viewer could immediately identify what the photographer had chosen to focus on.

In other words, this dumb technical tool could be a creative one that could enrich the process of picture taking, one that could open up options for adding new psychological and emotional depth to pictures that then engage the viewer in very different ways than images with sharp focus.
throughout. My whole attitude toward the subject shifted with this new understanding.

This time, when I gave them an assignment specifically to use a large aperture and shallow depth of field, my intention behind it was completely different. I wasn’t interested in their simply understanding the technical use of the camera. That piece was now subsumed within the larger context: what makes this interesting and how can you use it in personal ways? The results of their efforts were uniformly more engaging.

Even more telling about their understanding and appreciation for this new “tool” were their subsequent self-directed efforts. They started using it by choice, in other words, transferring their knowledge from the first assignment to self-selected situations, a sign of genuine learning in Immordino-Yang’s terms. When one student photographed a rounded cluster of leaves in sharp focus against the blurred leaves of the tree behind (see fig. 2), I knew exactly what he was seeing and wanted me to see. When another student focused on one edge of a long bench throwing the rest out of focus (see fig. 3), I knew that she was intrigued with the resulting mystery of a thing seen only partially. And when another student, as part of a lesson on capturing images of adolescence, focused on the sole of a
friend’s sneaker (see fig. 4), consequently blurring his reclining body in the background, I wondered if she had, knowingly or unknowingly, taken a lesson from DeCarava. Depth of field was no longer just a technical piece of information but a path toward seeing creatively and toward making new meaning out of their photographs.

I have learned many things from this experience—some are about myself and my habits of thinking, and others are about the usefulness of engaging with research. As for my self-understanding, the block with this subject
was really mine, not theirs. Curiously, photography is about seeing, but in this case I was blinded by my own stuck habit of thinking in a certain way. I can’t teach effectively when I have no emotional connection to the material any more than they can learn without it. If there is an area of my teaching that is not working for one reason or another, I need to remember that it is not because the students lack intelligence. Maybe, just maybe, I am not approaching the subject in a way that is most appropriate for their stage of development. I need to stop and look at it carefully using some of the new understanding that I have about the brain, about the importance of the emotional connection, and about cognitive development. The solution is not simply finding an innovative way to present the material nor to entertain the class, but something more fundamental. This is a lesson that reaches into all areas of my teaching.

Finally, and underscoring the whole point of this article, is the benefit of engaging with the research. The answers or solutions I came up with were not articulated by the research. What it provided was a different lens through which to examine my teaching practice and another way to consider the problem. It offered me direction and a clearer understanding of what was going wrong and ultimately confirmed something that I had intuitively
understood from the start. And I now have more precise language of my own to describe and define the problem and to address similar issues in the future.

References

