

Embodying the Mind

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Abstract

Thought is an embodied experience, yet in contemporary schooling, the body—feelings, sensations, movement, non-linguistic perceptions, etc.—has largely been deemed non-essential. Contemporary neuroscience, cognitive science, and our lived experience recognizes the body as central to knowing, learning and subjectivity. As such, a reunification of body and mind is central to a holistic approach. This chapter will provide current understanding of mind-body unity, locate the importance of felt-sense in human consciousness, provide concept and example of practice for engaging multi-sensory experience, as well as the value of hands-on and place-based approaches to learning, returning the body to school.

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I have ceased to question stars and books: I have begun to listen to the teachings my blood whispers to me.

-Herman Hesse, *Siddhartha, Demian and Other Writings*

We are deluged with facts, but we have lost, or are losing, our human ability to feel them. Which means that we have lost or are losing our ability to comprehend the facts of our experience.

- Archibald MacLeish, *A Continuing Journey*

The body has largely been left out of the classroom. There is a long tradition in the west, from Plato to Augustine to Descartes and beyond, of thinking ourselves as detached from the body, including the body of nature. Our physical body has been perceived as a container of suffering—the prison house of the soul for Plato; the throbbing source of moral failure as Augustine understood; and for Descartes, a

machine on which the head rides around. As a result, the body and all that goes with it—feelings, senses, and non-linguistic perceptions—has been understood largely as a source of static, mere noise, in contemporary education. The directness of a felt sense or gut intuition, the clasp of hand to tool or the scent of the day, are irrelevant to objective, abstract concepts and categories.

As part of the dismissal of the body, the modernist emphasis on objectivity—seeing what is on the outside—has pushed subjective perception (sensing what is on the inside) far to the background. While the subjectivity of the romantics found some shelter in the humanities, there has been only a little space for this, given the powerful sweep of the modernist worldview and Cartesian split of mind from body.

In addition to the physical body itself, to be embodied means that we are embedded in the world. In the pre-modern worldview we were immersed in the world, part of the anima mundi, the world soul, and often at the whim of the fervent, fecund forces—divine, terrestrial, archetypal—of a living universe.

The enlightenment freed us from this enmeshment. The modern mind separates the self from the world, gradually differentiating us from it. However, in so doing the modern world has become disenchanted, to use Max Weber's term (1946, p. 139). No longer a world alive with meaning, magic, and metaphor, the world becomes largely a collection of objects, inert and available for our manipulation.

Beyond the possibilities and the problems that this objectivist, materialist worldview has wrought on the world, it is especially our consciousness that pays: "The achievement of human autonomy has been paid for by the experience of human alienation" (Tarnas, 2007, p. 25). This great ability to objectify has left us in our heads, outside or above the world and our bodies, searching for a way back in. Today we are not simply looking for a description of life; we are hungry for an experience of being alive. That experience comes from being embodied in the world here and now.

One of the front edges of understanding human thinking is what is being referred to as 4E Cognition (enacted, embodied, extended, embedded). Rather than passively receiving the world, there is constant interaction between mind, body and environment. Enacted implies that we shape the world we see, a more constructivist approach we might say. Embodied tells us we know through our bodies. Extended suggests that consciousness stretches out beyond the body-mind into the environment. Embedded recognizes that we exist within a context, embedded in culture and locale. This is too superficial a depiction, of course, but it does give a sketch of a theory of mind that challenges the prevailing Cartesian dualism and the detached, self-generating consciousness that remains a dominant superstructure for educational theory and practice. As such it helps to justify and make space for the return of the body to education.

If our mind, our consciousness, our thinking process is enacted, embodied, extended, and embedded then the path ahead for consciousness and culture is to find a way back into the world and into our bodies. The solution is not a return to the pre-modern worldview any more than it is to return to the preverbal state of childhood. Instead the challenge is to reunite body and mind, world and self in a new integration. When we do, the body returns as a legitimate source of knowing engaged in a living universe.

Developing Consciousness

One of the primary assumptions about human development (and evolution) in the modern era is that human beings develop from childhood toward more abstract reasoning. We start out fairly undifferentiated in cognitive function. All the ways we know the world—sensations, feelings, perceptions and thoughts—blend together in a relatively undifferentiated experience in the infant. In time we gain more capacity for recognizing the difference between the object we are looking at and ourselves—subject-object distinction. This powerful ability to apparently detach ourselves and put names to others is at the heart of a modernist worldview and virtually defines the direction for contemporary education.

So we build curriculum and pedagogy with emphasis on abstraction and objectivity. But here is the problem. Development involves not only differentiation toward abstraction but also integration, not only objectivity but also subjectivity. We do not lose our bodies, our capacity to feel, sense, and commune with the world around us in favor of a detached, abstract categorical understanding, but modernist education has encouraged us to do just and only this.

The status of recess, the arts, subjectivity, movement, feelings, craftsmanship, and hands-on, in-the-world learning has been shrunk in order to provide more time for the important tasks of learning abstract curriculum. It is no wonder that attention and motivation become problems when our bodies are taken out of the loop of learning. If we do lose that ground of lived experience the world becomes, in Whitehead's (1929) words, "a dull affair, soundless, scentless, colorless." (p. 54)

Werner, however, recognized that the capacity for enriched thought is not simply higher abstraction but what we might better term integration. He introduced the concept of microgenesis, in which during each interaction with an idea or an object we recapitulate the same developmental sequences that characterize development through the lifespan. In response to a task we may have a sensory-motor reaction, then a vague, global sense and maybe eventually a crisp idea. He argues that it is this incorporation of and flexibility through these other layers—microgenetic mobility—that enriches and vitalizes cognition. For Werner, the ability to access or "regress" to this more "primitive" processing—vague hunches, gut-feelings and other bodily sensations, intuitions and pre-conceptual images, actually engenders greater potential. He concluded that "The more creative the person, the wider his range of operations in terms of developmental level, or in other words, the greater

his capacity to utilize primitive as well as advanced operations (Werner, 1957, p. 145). A variety of studies that attend to the phenomenological accounts of scientists, artists, and psychotherapy clients suggest that their process of breakthrough and insight often emerge in a fashion that supports Werner's ideas and thus makes a case for bringing those gut feelings, vague imaginings, and the like back to the process of learning.

In order to activate microgenetic mobility, we might ask students in any discipline to draw a response to a particular problem rather than use language exclusively, ask about those images or vague hunches, inquire about how they feel or what movement they want to make in relation to the object of attention. In a small section of a university psychology class, my students are asked to use Play-Doh to depict (and then later explain) an aspect of their personality when we are working on that section in our text. I am always amazed, after some playfulness, by the silence and intensity of concentration that comes over the room as they fall into this kindergarten-like assignment. There is something about the tactile nature of it that takes them deeply internal. Their depictions, molded and then spoken, are rich with insight. They provide an opportunity to integrate ideas, form, language and feel. As if having discovered a portal back to some homeland lost in the abstract world of schooling, many ask earnestly if they can keep the Play-Doh.

The Mind in the Body

Mind-body medicine increasingly recognizes that mind and body are intertwined. How we think can affect our body. Frustration and pessimism, for example, impacts immune response that makes us vulnerable to everything from a cold to cancer. Likewise, the well-established Placebo Effect demonstrates that thinking that we have taken a new drug, for example, even when we have not, causes the changes that the actual drug was supposed to induce in a consistently large percentage of participants.

But the process also works in the opposite direction; the body impacts our thinking. If for example, we have a cold or a pain, we may notice that our concentration wanes; but it goes deeper under our skin than this.

In the 1980s neuroscientist Candace Pert (1986) found something in the last place a good brain scientist would expect to find it. Her research uncovered neuropeptides and their receptor sites, presumed to exist only in the brain and central to our thinking processes, in the gut. It begged the

question of whether the gut and perhaps other parts of the body were capable of thinking too. As Pert (1986) concluded, "I can no longer make a strong distinction between the brain and the body" (p. 16).

Today we recognize that there is a highly complex, bi-directional gut-brain system, referred to as the Enteric Nervous System, impacting affect, motivation, and higher cognitive functions including decision making (Mayer, 2011). In recognition of this link, some psychiatrists, for example, are prescribing probiotics to increase bacteria in the gut in order to treat psychological problems such as OCD and anxiety, recognizing that the gut is somehow integrated with mind (Arnold, 2013). This goes further still as we are beginning to notice the influence of diet and stress on cognition and mood (Perlmutter & Loberg, 2013).

The knowing body extends well beyond just the gut. For example, according to the Radical Active Cognition (REC) model, "the hand [is]...an organ of cognition" (Hutto & Myin, 2012, p. 47). "According to REC, there is no way to distinguish neural activity that is imagined to be genuinely content involving (and thus truly mental, truly cognitive) from other non-neural activity that merely plays a supporting or enabling role in making mind and cognition possible" (p. 12).

Although we are not even close to having it all mapped out, we are beginning to put our parts back together. That is, mind and body, gut and brain, hand and head, exist not separate from one another as Descartes implied, not even as connected as early mind-body medicine understood, but as a complex, interactive unity (Dreher, 2003).

The Knowing Body

Our bodies know things before our mind registers them. In one study, University of Iowa scientists asked participants to play a card game involving four decks of cards, two blue and the other two red. Each card either wins you money or costs you money. The goal is to turn over cards one at a time from any deck to maximize your winnings. The red cards offer some high rewards and high costs. In fact, what you do not know to start with is that the game is rigged so you can only win by turning over cards from the blue deck. As you play the game, how long will it take to figure this out?

As it turns out, participants in this Iowa study get a hunch, an idea, after they have turned over about fifty cards. Although they cannot say why, they know they prefer the

blue deck. In time reasoning kicks in and we may start to develop a theory or explanation about it.

However, there was one more interesting aspect of the experiment. The researchers hooked each participant up to measure their galvanic skin response (electrical conductivity of the skin-sweat) in the palm of their hands. The more stress we experience, the more sweat we register, the higher the G.S.R. What they found is that the participants started to generate a stress response to the red cards by the tenth card. Their actions also correspondingly started to favor the blue decks at about that same time. But they did not have an idea or a hunch that any of this was happening until the fiftieth card and it took eighty cards before they formed a clear theory about it (Bechara, Damasio, Tranel, & Damasio, 1997; Gladwell, 2005). Their bodies knew before their thinking made sense of it.

While we often assume thought generates feelings, it looks like thought, emotion and sensation work in a more integrated and bi-directional fashion. A thought might indeed lead to a feeling and felt sense, but at the same time a physical reaction may be just as likely to lead to a thought. For example, in the Iowa study it looks like the chain of experience goes like this: physiological reaction (increase in sweat), felt sense (a vague hunch or gut sense), a feeling (“I feel more comfortable with blue cards.”), an idea or concept (“It’s the blue cards!”).

Staying “in” or attuned to our bodies gives us a profound source of information about the world. Listening to those gut feelings, incorporating our hunches, feeling our way into the question and thinking it through combine to enrich our knowing. Our thinking is actually a more sensory, body-infused, multi-dimensional process than the dualist conception assumes.

This sophisticated emotional system has been mistakenly pushed to the sideline, seen as merely secondary, largely separate from and simply controlled by the more elevated thought process, what neuroscientist Antonio Damasio (1994) referred to as Descartes error—I think therefore I am. The result has been a loss of attention to the sensitivity and integration of the emotional-sensory-bodily world and instead a tendency to “live in our heads.”

As William James understood more than 100 years ago, thought is an embodied experience. That is, there is a continuous thinking-feeling process or flow that is in transaction with the environment and tied to the body’s

monitoring of its own states. Whether we are writing a paper or talking with a lover or painting a picture, we feel how our thinking is going. We sense when it is blocked. We feel when it moves forward and how it moves (Johnson, 1989).

Psychologist Eugene Gendlin wondered what made psychotherapy work. He knew that sometimes it did, fulfilling its promise for help and healing, but just as often despite the time, expense and commitment, it seemed to do very little. In time he discovered that there was something particular happening in therapy when it was transformative. In clients for whom therapy made a difference there was sometimes insight into their difficulties, new commitments to change behavior, and the like, but the thing that made a difference was their body. That is, change was catalyzed by an awareness of what Gendlin called a “felt sense.” While one may have an intellectual insight, it was this felt bodily sense that corresponded with change. He understands the body and the person as a unified system and that the body has a subtler take on what is going on. He developed a method called Focusing, which directs us to the body, beneath the surface of feelings in order to pay attention to those inner sensations and gain insight (Gendlin, 1982). This inner awareness has also been referred to as interoception (e.g., Siegel, 2010).

So if, as mind-body medicine and body-oriented psychotherapy suggests, consciousness is indeed embodied in this way then education is served by including the body, especially this felt sense, in our lesson plans.

This inner listening provides a simple and flexible method for directing our attention inward and tuning to those vague sensations in our body. While we might typically ask students what they think about something, we could instead, or in addition, pause for a few moments and shift from the mental chatter to the body. This is the principle procedure and can be applied in trying to sort out an answer to a homework problem, picking a research paper topic, or navigating our social relations in class: “Be quiet for a few moments and shift inward, into your body, perhaps in your torso or elsewhere that seems right to you or that you seem drawn to. Where in your body do you notice that issue? What is the felt sense under the feelings and far beneath any thoughts? Stay with it and notice what arises as you give it your gentle attention. What are the qualities of that sensation? How is it changing as you notice it? What might you name that as you stay with the felt sense that arises?”

This interoceptive awareness complements the typical rational thought process bringing enriched knowing to any enterprise at any moment. Recognizing both the felt sense and also putting name to it demonstrates the microgenetic mobility that Werner recognized, integrating levels or aspects of consciousness.

Coming to Our Senses

In addition to the value of inner felt sense, we know the world most directly through our senses. Leonardo da Vinci claimed that “All our knowledge has its origin in our senses” (Capra, 2007). But the emphasis on rational abstraction has made the senses second-class in favor of a world once removed through language and categorical understanding. Without the grounding of the senses the world becomes virtual instead of visceral. One opportunity an embodied mind presents is to reappraise the value of the senses.

Blinded and deafened by illness at fifteen months, Helen Keller struggled for six years in a dark world where neither her own existence nor the world around her made any sense; she grew more alienated and detached. Her salvation came not only in the form of her teacher Annie Sullivan, but from a deep connection between the sensual world and the world of language. Her opening took place at the age of seven:

We walked down the path to the well-house, attracted by the fragrance of the honeysuckle with which it was covered. Someone was drawing water and my teacher placed my hand under the spout. As the cool stream gushed over one hand she spelled into the other the word water, first slowly, then rapidly. I stood still, my whole attention fixed upon the motions of her fingers. Suddenly I felt a misty consciousness of something forgotten—a thrill of returning thought; and somehow the mystery of language was revealed to me. I knew then that “w-a-t-e-r” meant the wonderful cool something that was flowing over my hand. That living word awakened my soul, gave it light, hope, joy, set it free. (Keller, 1961, p. 34)

This moment describes more than a cognitive developmental leap; a bridge was built to the world through integrating sense and syllable.

We recognize the value of senses at the high end: a wine connoisseur, a symphonic conductor, a mechanic whose ear is tuned to the subtle sounds of an engine. Each represents awareness in the form of sensory perception that can bring more depth to knowing. Individuals who live close to the

land may develop keen observation skills, and great naturalists like Charles Darwin and John Muir notice subtleties that others may miss. Such fine honed sensitivity helps us recognize the potential of the senses. Opportunities for careful sensory observation raises the profile of senses.

Howard described himself as struggling and lost as a learner until one day in his biology classroom.

Mr. Scroggins was a southern man in a California public school. He would get us to draw what we saw. As we looked at slides under the microscope he had us fold unlined paper in half and draw 3 pictures maximum on each page. I could use colored pencils. This drawing got me to focus on seeing more than analyzing abstractions or simply memorizing words. I remember thinking that if I ever saw mitosis floating by in my day-to-day life I would recognize it because it was now embedded in my mind. I remember the phases and I could see it because I could draw it. This all caught me by surprise.

His confidence and his capacity made a quantum leap thanks to bringing the senses and the abstractions together.

In literature, great description engages the body via the senses—“it was a dark and stormy night”—to evoke a visceral experience of the event. Social scientists seek thick phenomenological descriptions to capture the body of human experience. Great poetry or other art often mixes and joins senses and levels in a synesthetic event.

Early in life we become conditioned as to how to talk about (and thus experience) our senses as fairly segregated from one another. We describe a meal by its taste, music by its sound. But senses are not so distinct. During moments of expanded awareness nearly everyone can have synesthetic experiences—merged or multi-senses—and young children seem to have them often. We discover that some of our great artists and poets seemed to maintain synesthetic perception. This was the source of their great metaphors or unique ways of both taking in and representing the world. “I heard flowers that sounded, and saw notes that shone,” reports eighteenth-century philosopher Saint-Martin (Underhill, 1961, p. 7). Synesthetic impressions occur not only in perceiving outwardly—a blue sky or the sound of a bird—but also inwardly, as with the birth of an idea. Mozart described his process of composing in this way: “I can see the whole of it [musical composition] at a single glance in my mind, as if it were a beautiful painting...in which way I do not hear it in my imagination at all as a succession...but all at

once" (James, 1893, p. 255). Cognitive neuroscience is coming to understand just how valuable multi-sensory perception is.

The key to robust perception is the combination and integration of multiple sources of sensory information. This is because no information-processing system, neither technical nor biological, is powerful enough to 'perceive and act' accurately under all conditions" (Ernst & Bulthoff, 2004, p. 169).

Synesthesia may represent a reminder of our capacities—the multi-sensory human. Merleau-Ponty (1962) tells us that we are naturally synesthetic, but culture has shifted "the center of gravity of experience, so that we have unlearned how to see, hear, and generally speaking feel, in order to deduce [what we sense]" (p. 205). That is, education and culture not only teach what we are supposed to know but especially how we are to know. This mediates our experience with our mental categories.

The implication then for the front edge of human development is to become more fully multi-sensory beings, reawakening the delicate sensitivity of all our ways of knowing and in so doing return the body to a legitimate source of knowing. When we do, perception becomes more robust and reliable and our metaphors more meaty.

We can dismantle the fences of our own perception by paying close attention to our senses. We can also expand our sensory habits by asking questions such as: "Does that sound have a shape?" "Draw what that song feels like in your body and then describe it to us." "What is the shape of this taste?" "What does that idea look like?" Playful, even ridiculous at first blush, this divergent breaking of categories opens up both the body and new possibilities. In so doing we may regain more richness and unexpected connections that the senses have to offer.

Sensitivity is about expanding both inwardly—gaining awareness of our own feelings and sensations—and outwardly—as we take the world in through our unique ways of knowing.

Maybe the deepest value of embodiment is that the sensual body is the most immediate and direct source for accessing non-calculative, contemplative consciousness, a critically important and nourishing aspect of mind (e.g., McGilchrist, 2009; Hart, 2014).

The senses have a special place as matter and spirit join in human life. While the senses and the body in general have been disparaged by the likes of Plato and Augustine, they are our most natural instruments toward knowing the world directly, in the immediacy of now. Like the superpowers possessed by the ancient gods or our comic superheroes, we could even imagine that the human senses are like divine powers. They are the sacramental instruments we have been given. "Every sound is an opportunity to be conscious," every taste a chance to awaken, every touch an invitation to be alive here and now. "It is the cosmos calling" (Kingsley, 2006, p. 30).

This embodied sensual portal provides a profound, simple and eminently available alternative to a chattering mind, enabling us to move into the immediacy of a sensation inside or outside. Lost in thought or fantasy, stuck in some emotional loop about the past or obsessing about the future, factoids and flash bobbing for our attention—this is the common situation of mind that we are typically faced with. Attuning through a sense provides a powerful shift of consciousness, even a portal into the present moment. Through the smell of a rose, the sun on our face, the feeling in our gut, we utilize these "divine powers" and help the cosmos unfold itself right in our midst, actually right through us as naturalist John Muir understood:

"The sun shines not on us but in us,

the river flows not past us but through us" (Muir, 1938, p. 92)

Just Do It

Our powers of observation, of refined discrimination, self-discipline, deduction and calculation, systematic experimentation, and problem solving all are activated when we embody an idea in an action in some way.

Information must be utilized, applied, integrated in one's mind and life in order for it to move toward mastery. We actually have to "do math" in order to learn it: learning formulae is insufficient; we must practice reading in order to master it, and so on. And often, mastery comes only when knowledge is applied in the world.

John, a graduate student at a premier engineering and science research university, never understood basic fractions until he began to experiment with woodworking in college. Only when he needed to use math to solve problems, to measure, cut, and calculate in order to build his ideas, did it

click for him. Mary remembers the pleasure and sense of accomplishment in learning fractions as a child by making reduced-sized recipes, a single cream puff or cupcake after school. Both of these students turned information into knowledge by applying it in their world.

Progressive educators have a long tradition of attempting to provide a more immediate relationship to the object of learning. Rousseau (1957) advocated learning “naturally” and by doing; his call was taken up by Pestalozzi (1951), who focused on learning through direct concrete experience. Dewey (1963) emphasized learning by experience and through cooperative endeavors. Some of this insight has certainly been incorporated in the mainstream. For example, in science education, we see initiatives to bring teachers and students into the “field” of their subject by experimenting and solving problems firsthand. They may work on a problem of erosion in a nearby river by visiting the site, taking measurements, constructing models, and so forth. And many enrichment programs emphasize problem-solving experiences. This gives immediacy to abstract information and necessitates its use in practice.

Projects can help bring learning to life: “Build a chair out of cardboard.” “Make a positive difference in someone’s life.” “Design a more energy efficient building.” “What is autism like?” “How could our classroom be more successful?” “Design a website...” In a classroom (or a workplace) framing the learning environment as an opportunity for discovery and creative problem solving, rather than simply downloading data, helps enact and embody learning. Most disciplines lend themselves to this. One shoe never fits all and while research on project-based design is generally very positive, it does require skilled and flexible teachers (Bredderman, 1983).

However, this voice of direct contact too often gets overwhelmed by curricular demands, scheduling limitations, and primarily by the assumption that we can download material into an empty vessel or memory bank and adequately evaluate knowledge through a multiple-choice exam. The accountability movement and its accompanying anxiety tends to push project-based, hands-on learning to the sidelines. Not only do ideas remain inert without firsthand contact, but students can easily remain inert themselves, listless or mechanical, partially asleep.

In the 1970s the Finnish government decided that in order to be relevant in the new global marketplace, one in which manufacturing was no longer the mainstay for a country

without vast natural resources and inexpensive labor, they needed to become a knowledge-based economy. To get it up to speed they understood the need to renovate the educational system. The results nearly forty years down the road show that student test scores in all three areas of testing: math, reading and science are among the highest in the world. Finland is also at or near the top in quality of life, which is not the case among other top scoring nations like Singapore and South Korea, who rely on long hours, lots of memorization, plenty of competition and testing. But how does Finland do it?

Finnish children play more: 75 minutes a day in elementary school recess as opposed to the average of 27 minutes in the U.S. Finnish Schools mandate lots of arts and crafts. According to scholar Samuel Abrams “students in grades one through nine spend from four to eleven periods each week taking classes in art, music, cooking, carpentry, metalwork, and textiles. These classes provide natural venues for learning math and science, nurture critical cooperative skills, and implicitly cultivate respect for people who make their living working with their hands” (Abrams, 2011).

There is no standardized curriculum. Teachers design their own classes using a national curriculum only as a guide and resource. No standardized curriculum is bad enough, but perhaps most unsettling to prevailing American assumptions about school reform, Finland has no standardized exams. The only exception is if students intend to go on to University, in which case they take The National Matriculation Exam at the end of what is roughly equivalent to our high school. Instead of centralized testing regimes, teachers assess students in their classrooms using tests that they create themselves. Students are graded on an individualized basis. Students are not held back because of the overwhelming social stigma that would result but instead are given additional help.

Along with testing and accountability, competition is one of the cornerstones of an American approach to educational improvement. Not so in Finland. The goals for Finnish school reform were not super achievement; instead it was equity, seeing that all children are well educated regardless of region or class. The result, however, is this exceptional performance.

But unlike the United States, for example, Finland has a fairly homogenous population. (Although many U.S. states would be comparable both in terms of size and homogeneity.) It begs the question of whether a style of educational reform

dependent on cooperation and equity rather than competition and performance is applicable in a place like the U.S. Abrams has addressed the effects of size and homogeneity on a nation's education performance by comparing Finland with Norway. Like Finland, Norway is small and not especially diverse overall, but unlike Finland it has taken an approach to education that is more American than Finnish. The result in Norway: mediocre national performance (Abrams, 2011).

In addition to becoming more attuned to the body through simply shifting our attention, moving the body may help open the mind as well. Our body-mind operates as a system, so activity, posture, sensation, and awareness in one aspect may both affect and reflect other aspects, like thought.

Lara was a willing student but could not seem to make sense of her math classes, struggling mightily but without anything that could be considered success. She just could not seem to get it. One day she was moving, spinning, dancing and something clicked. She realized that she spontaneously wanted to move in certain ways in response to a math question and then began experimenting further. Remarkable to her, when she did move she seemed to actually understand the math. There was something about the movement that apparently activated her mind in fresh ways. She went on to complete college degrees in mathematics alongside training in Russian classical ballet. She works professionally now with integrative movement, utilizing a host of practices to help children with special needs, chronic pain patients, and optimizing wellbeing and performance for anyone (Gillease).

Educational Kinesthesiology offers a series of physical exercises and an understanding that moving the body helps keep attention alive, may decrease immediate stress response, and helps shift consciousness, such as when we feel intellectually stuck or overwhelmed. Certain practices, such as any bilateral activity (walking is such an activity), may help synchronize or balance activity in left and right brain hemispheres. At the very least these simple activities can be a playful way to return the body to learning as we shift mood and attention (Hannaford, 1995).

The Power of Place

In 2007 the residents of Walton, Kansas wanted to save their local elementary school and perhaps their town along with it. With only sixty students left, the school was no longer cost effective and was slated to shut its doors. But the

Newton district, of which the school was a part, took a risk. Instead of closing the school they radically reconstituted it as The Walton 21st Century Rural Life Center, a charter school with a very different curriculum.

The school, and much of Kansas, is oriented around farming. This does not mean teaching children to be farmers but instead using the life around them to learn. And, so it seems “there is almost nothing in elementary education that can't be explained by relating it to cows and plows.” For example,

“The students sell eggs produced by a small coop of hens. Every morning they rush out to collect and wash the eggs, inspect them for cracks, and box them for sale for \$2 a dozen. (They recently bought a sheep with the proceeds.) The students learn how to tell the difference between a Delaware Blue and a Rhode Island Red, but also about profit and loss, and when the chickens don't lay enough to meet projections, supply and demand” (Headden, 2012).

“Walton kids take rulers and protractors to everything from tractor tires to goat horns. They learn their ounces, cups and pints by measuring grain for animal feed and oats for granola. ...The fourth graders recently made a mockup of a wind turbine, learning about things like torque and the behavior of different blades...[I]n the school's prairie garden, native Kansas plants prompt lessons about soil composition, weather patterns, and ecology” (Headden, 2012).

Today the school is flourishing and student test scores jumped to the top five percent of all schools in the state.

Part of what makes Walton succeed is not only the project-based design but also that it is “place-based.” That is, in so many ways it is integrated into the community of which it is a part.

Place-based learning is about using the natural and social community that we are embodied and embedded in as the basis for education. Like Walton, Kansas the environment, both natural and cultural, at our back door is fertile ground for making learning relevant, intimate, and alive. Whether considering local stream erosion, changing population demographics or oral history, this locates learning in the middle of our home base (“Place-Based Learning,” 2011).

Radical Brazilian educator Paulo Freire (2000) recognized the social and economic oppression of peasants in his native Brazil. His approach toward social justice, referred to as critical pedagogy, was a kind of place-based literacy.

Emphasizing critical reflection of the local economic and power dynamics, his approach explicitly taught language and implicitly taught empowerment and social justice. Any local concern (and even nonlocal given our current global access to one another and to information) may serve as a kind of place-based trailhead for learning.

One place that is left largely unaddressed in this chapter is our embeddedness within the earth, the natural world. That aspect of embodiment is so central as to deserve its own space rather than a short section in this article.

Craftsmanship

For three and a half billion years or so, life on earth has been adapting. In his book *Learning from the Octopus*, ecologist and security expert Rafe Sagarin (2012) suggests that in these times of incredible demands, ranging from terrorism and environmental catastrophe to pandemic disease, we can learn something about solving problems from the way nature operates. This has implications not only for post-9/11 security concerns, but also for how we educate, especially in a world that is so incredibly dynamic, unpredictable and interrelated.

When considering the natural world, one of the first and most obvious aspects noticed is the diversity of responses. Some things work and some do not, but a lot of mechanisms are experimented with. Diversity and divergence is the motor behind evolution, and so the most direct lesson from nature is that rather than work toward single responses—single right answers that so predominate in educational curriculum—it is diversity that generates new possibilities in nature and the classroom.

Secondly, all natural systems have a built-in feedback loop. If an adaptation works then the organism thrives; if it does not then the organism may be in peril. It is important to construct an educational arrangement whereby feedback is built in and fairly immediate, so that both student and teacher can recalibrate, adjust and continue to learn. This is an environment where the need for one right perfect answer is modulated with the need for process and experimentation. If one thing does not work, find out as quickly as possible and try something else. Feedback is best when it is quick and clear.

In addition to diverse responses and natural feedback loops, in the natural world Sagarin demonstrates that nearly all organisms have symbiotic relationships with others, helping to solve one another's problems. Bees spread pollen in

exchange for nectar; lichens consist of a partnership between fungi, algae and bacteria. The implication for humans, whether at the level of security concerns or for the classroom, is the value of an environment in which cooperation and collaboration can emerge alongside independent effort and friendly competition.

The pursuit of craftsmanship is one way to think about learning that highlights organized creative redundancy and experimentation, feedback, and cooperation.

Like the medieval workshops, classrooms (virtual or otherwise) contain masters—teachers who set the direction and vision for the work, emerging journeyman—those whose talent or growing skill place them at the head of the discipline and therefore natural aids to the apprentices—those students who are working to learn the new skills (Sennett, 2008).

Whether in learning the use of language or algebra, or in taking an engine or idea apart, developing skills becomes more than information download—it becomes craft when an appreciation of beauty and quality, process and form join head and hand. The workshop passes beyond passive transmission and instead engenders first-hand engagement, bringing a living exchange between knower and knowledge. Incorporating a writer's workshop model, a problem-focused design, a project-focused orientation, a project in the field, and a hands-on laboratory are among the means to retool the classroom as workshop and learning as craftsmanship.

My friend Kent learned to write in Mr. Monroe's eight-grade English class. Mr. Monroe decided that it would be his mission to make sure his students could write before they entered high school and so he set his class up as a kind of writing boot camp. Essentially it was an on-going writing workshop in which students read one another's papers and offered constructive feedback, all the while under the supervision of Mr. Monroe. "This changed my relationship to education," Kent told me. "I remember loving to write for his class.

Up to that point in my life every class was set-up in the traditional way—students lined up in rows, and the teacher facing students. Mr. Monroe's classroom was filled with big round tables. He would have us write on a specific topic, and then we'd bring it in and divide up into pairs to review each other's work. I spent a whole year working on my writing and getting the feedback from my peers and from Mr. Monroe. Additionally, I spent that year reading the

writings of my co-students, and I learned how to see them with a critical eye and to express this in supportive language. It was also the first time that I remember developing close connections with my classmates, as we were so involved in helping each other learn and grow. I have some fond memories of sitting around those big tables, huddled up with a classmate, discussing the papers that we wrote. In retrospect, it was more like a workshop or lab than a classroom. It was in this setting that I developed a beautiful relationship with writing.

I really learned how to appreciate receiving feedback. Before him, the teacher's pen usually left a message on my papers of "good" or "bad." In Mr. Monroe's class it was all about constructive criticism. I learned to gracefully give and receive feedback. This not only helped in the development of my writing skills, it had a permanent impact on my capacity to learn and grow. Rather than seeing feedback in a negative light, which would have created defensiveness in the process, I learned the beauty and support of quality feedback. I learned to really appreciate hearing the view of others, and to see criticisms as gifts.

Too often in the classroom, the obsession with one right answer across multiple domains focuses on final product and final grade instead of process, missing the chance for classrooms to function more as workshops or artist's studios or laboratories, where trial and error, experimentation, feedback, and adventure provide the means to develop ideas and skill. Alongside more teaching-for-the-tests, the result of this form of abbreviation is that "neither teachers nor students are willing to undertake risks for understanding; instead they content themselves with correct answer compromises. Under such compromises education is considered a success if students are able to provide answers that are sanctioned as correct" (Gardner, 1991, p. 150). Overemphasis on information acquisition has inadvertently worked against higher-order intellectual skills and led to a constriction of human consciousness.

Craftspersons create something that enters the world in some way that others can touch, use, taste and see. We can see what works or flops: feedback. Thanks to today's technology, extended opportunities for more real world feedback are available; we can take our craft into the wider world. For example, through class-only or real world blogs, students can put their work into the world and with a little luck receive meaningful feedback.

Thompson (2013) describes an extremely low performing school in New Zealand where teachers tried a fresh tack. Recognizing that motivation can change when one is writing on a topic important to them and writing for an audience, students were required to post their own writing on a live internet blog.

Things started to change when students began to receive comments from other authors. There was a real audience out there, in some cases way out there, as students marveled at receiving a post from Germany or the United States. Thompson reports that when one student reviewed a book online, the author popped up to comment on the review. Students had a real-world audience and the result was a dramatic increase in their motivation. With it, their teachers observed them paying more attention to punctuation, to clarifying their points, and to editing in general. Additionally, they were now doing the key thing that helps one improve at writing: they were writing more. Their motivation exploded. They were figuring out what to write, how to best convey it to their audience, making sure it was as clear as they could make it, and perhaps most significantly, they were writing on their own (Thompson, 2013).

Beyond the effect on writing itself, it turns out that writing is also powerfully helpful with improving reading. That is, crafting something in writing helps us understand what we are reading. Literary scholar Steve Graham concludes from analyzing dozens of studies that writing about a text helps us to understand and internalize the material better than "just reading it, reading and rereading it, reading and studying it, reading and discussing it, and receiving reading instruction" (Graham, Hebert, 2010).

And by the way, the reading and writing scores for the New Zealand school children improved dramatically.

We are coming to understand the body and mind as a unified system of consciousness. No longer merely a source of suffering or a mere machine, the body is central to knowing. To be embodied means to enter into our life with all the taste and texture, tone and temperature that being human entails. Attunement to our inner sense, fresh appreciation for the outer senses, and the value of activating the mind through movement and activity returns the body to its natural place in learning. The value of hands-on activity engenders an environment that operates more as a craft or artist's studio, inviting feedback, cooperation and diversity of response. We extend into and are embedded within a larger

community, a larger world. As such, embodiment means using the immediacy of what is at our back door and at our fingertips. If education is to engender its deepest promise of liberating human potential it will need to remember that we are embodied beings.

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References

- Abrams, S. E. (2011). The Children Must Play. *New Republic*.
<https://newrepublic.com/article/82329/education-reform-finland-us>
- Arnold, C. (2013). Gut feelings: The future of psychiatry may be inside your stomach. *The Verge*.
<http://www.theverge.com/2013/8/21/4595712/gut-feelings-the-future-of-psychiatry-may-be-inside-your-stomach>
- Bechara, A., Damasio, H., Tranel, D., & Damasio, A. R. (1997). Deciding advantageously before knowing the advantageous strategy. *Science*, 275(5304), 1293-1295.
- Bredderman, T. (1984). Effects of Activity-based Elementary Science on Student Outcomes: A Quantitative Synthesis. *Review of Educational Research*, 53, 4, 499-518.
- Capra, F. (2008). *The science of Leonardo: Inside the mind of the great genius of the Renaissance*. Anchor.
- Da Vinci, L. (1980). Il Codex Trivulzianus, Trans Anna Maria Brizio (Florence: Giunti editore) folio 20v.
- Damasio, A. R. (1994). *Descartes' error: Emotion, reason, and the human brain*. Putnam.
- Dewey, J. (1963). *Experience and education*. Collier Books.
- Dreher, H. (2003). *Mind-body unity: A new vision for mind-body science and medicine*. Johns Hopkins University Press.
- Ernst, M. O., & Bulthoff, H. H. (2004, January 01). Merging the senses into a robust percept. *Trends in Cognitive Sciences*, 8(4), 162-9.
- Freire, P. (2020). *Pedagogy of the oppressed, In Toward a Sociology of Education* (pp. 374-386). Routledge.
- Gardner, H. (1991). *The unschooled mind: How children think and how schools should teach*. Basic Books.
- Gladwell, M. (2005). Blink: The power of thinking without thinking. *Journal of chemical education*, 82(6), 823.
- Gendlin, E. T. (1982). *Focusing*. Bantam Books.
- Gillease, L. (n.d.). *Integrative Movement*.
<http://www.integrativemovement.com/>
- Graham, S., Hebert, M., & Carnegie Corporation of New York. (2010). Writing to read: Evidence for how writing can improve reading. *Alliance for Excellent Education*.
- Hannaford, C. (1995). *Smart moves: Why learning is not all in your head*. Great Ocean Publishers.
- Hart, T. (2014). *The integrative mind: Transformative education for a world on fire*. Rowman & Littlefield.
- Headden, S., & Education Sector. (2012). A Town Turned Classroom: How a Focus on Farming Saved a Rural Kansas School. *Education Sector*.
- Hesse, H. (1992). *Siddhartha, Demian, and Other Writings: Hermann Hesse* (Vol. 71). Bloomsbury Publishing.
- Hutto, D. D., & Myin, E. (2013). *Radicalizing enactivism: Basic minds without content*. MIT Press.
- James, W. (1893). *The principles of psychology*. H. Holt and Company.
- Johnson, M. (1987). *The body in the mind: The bodily basis of meaning, imagination, and reason*. University of Chicago Press.
- Kisly, L., Bamford, C., & Kingsley, P. (2006). Common sense-An interview with Peter Kingsley. *PARABOLA-MYTH TRADITION AND THE SEARCH FOR MEANING*, 31(1), 24-30.

- McGilchrist, I. (2009). *The master and his emissary: The divided brain and the making of the Western world*. Yale University Press.
- MacLeish, A. (1968). *A continuing journey*. Houghton Mifflin.
- Mayer, E. A. (2011, July 13). Gut feelings: the emerging biology of gut–brain communication. *Nature Reviews Neuroscience*, 12(8), 453-466.
- Merleau-Ponty, M. (1962). *Phenomenology of perception*. Humanities Press.
- Muir, J., & In Wolfe, L. M. (1938). *John of the mountains: The unpublished journals of John Muir*. Houghton, Mifflin.
- Perlmutter, D. (2018). *Grain brain: The surprising truth about wheat, carbs, and sugar--your brain's silent killers*. Hachette UK.
- Pert, C. B. (2002, January 01). The wisdom of the receptors: neuropeptides, the emotions, and bodymind. 1986. *Advances in Mind-Body Medicine*, 18(1), 30-5.
- Pestalozzi, J. H. (1951). *The education of man, aphorisms*. Philosophical Library.
- Place-Based Learning Offers Opportunities for High-Poverty Rural Schools. (2011). *The Rural School and Community Trust*.
<http://www.ruraledu.org/articles.php?id=2758>
- Rousseau, J. J., & Foxley, B. (1957). *Émile*. Dent.
- Sagarin, R. (2012). *Learning from the octopus: How secrets from nature can help us fight terrorist attacks, natural disasters, and disease*. Basic Books.
- Sennett, R. (2008). *The craftsman*. Yale University Press.
- Siegel, D. J. (2010). *Mindsight: The new science of personal transformation*. Bantam Books.
- Tarnas, R. (2006). *Cosmos and psyche: Intimations of a new world view*. Viking.
- Thompson, C. (2013). *Smarter than you think: How technology is changing our minds for the better*. Penguin.
- Underhill, E. (1961). *Mysticism; a study in the nature and development of man's spiritual consciousness*. Dutton & Co.
- Weber, M., In Gerth, H., & Mills, C. W. (1946). *From Max Weber: Essays in sociology*. Oxford University Press.
- Werner, H. (1957). *The concept of development from a comparative and organismic point of view*. University of Minnesota Press.
- Whitehead, A. N. (1929). *Science and the modern world: Lowell lectures, 1925*. Macmillan.

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