

Grounded Knowing: A Postmodern Perspective on Teaching and Learning

The distinctions between the “knowledge-as-separate object” approach to education and the “knowledge-as-intimate relationship” view have profound implications for curriculum and instruction.

A major premise of postmodern cosmology based on 20th century physics and quantum mechanics suggests that the fundamental character of our universe is neither energy nor matter but rather movement, process—the process of particles and energy flowing together into momentary patterns of being and then dissolving. While we can on one level “know” or experience nature as a panoply of stable things or objects outside ourselves, we now understand this as only one thinly abstracted conception of our involvement in the universe. A deeper conception of reality, initially proposed by Alfred North Whitehead (1929/1978), is *pattern*, or the multiplicity of dynamic relationships that define happenings or “occasions,” as Whitehead called them, of which substance is only one transitory phase.

The central point of this essay, drawn from the postmodern view of nature, is to present a distinction between two kinds of knowing—*grounded* knowing and *technical* knowing—and the implications of this distinction for the way we think about selecting curriculums and teaching them.

Photograph by Ariadne Grabnar, Baltimore, Maryland



We may look at trees every day, but do we really see them? To truly “see” a tree, or anything else, is a complex process—requiring internal as well as external vision.

Grounded Knowing and Technical Knowing

Grounded knowing apprehends (or metaphorically "feels") the natural history in which events or occasions emerge and become. Events or occasions such as a birth, or a storm, or a meal might be described in precise technical terms, respectively, by a gynecologist, a meteorologist, or a caterer. But in a deeper, more grounded sense of knowing, a birth, for example, begins with one's ancestry, with a courtship, with poetry, a first touch, and even before, imagination. A storm begins with the movement of clouds, subtle changes in atmospheric pressure, wind shifts, the movement of birds and animals. It may include fallen trees and flooded streams and the refreshment of life with new rain. So grounded knowing begins with and includes vague sensibilities, feelings, inarticulate thoughts and imagination, as well as the more precise and technical description of occasions as they come into being, as they exist, as they pass on.

Within grounded knowing, we feel the many aspects of an occasion as they move into the unity of an event. In a feast, for example, the food arrives and is cooked, the guests arrive, there is laughter and storytelling, problems of who sits where may be confronted, and so forth; but in the end we experience the feast as a whole experience, as a unitary occasion. Technical knowing, on the other hand, begins with language describing sharply delineated qualities of events, with a defined object or set of events that can be precisely stated. The feast is thus more accurately described by the recipes in the cookbook or by the prescriptions in the etiquette book. Technical knowing comes out of our effort to create highly controlled and managed settings, as in the case of human babies born in a hospital delivery room, although, of course, the fullness of the occasion is far more profound than the technical statement that ends up in a medical file. The criterion for what constitutes technical knowledge is generally what is "useful" in a narrow utilitarian sense—those things that

make our lives predictable, efficient, adaptive, comfortable.

Technical Knowing's Lure and Limitations

My thesis is that the predominant approach to legitimate knowing in today's schools is technical. Skill subjects like reading and writing provide us with the essential method of knowing. The written word, its decoding and transmission, is understood as full knowledge, although most of what we value or worry about is inarticulate, at least in the precisely defined terms of written language; for example, our knowing of joy in the discovery of a friend in a strange place.

The great lure of technical knowing lies in its power (often illusory) to describe, control, and manage the material environment, for example, a classroom full of children. Having a planned curriculum and physical materials of instruction gives us the sense of legitimacy that comes from "knowing what one is doing." It is associated with the magical word *professional*. (The deeper grounded experience of human death, for example, is com-

monly channeled by professional clergy and undertakers, although we are often shocked by the superficial quality of the well-managed wake in the funeral "home.") Whatever its limitations, technical knowing is tremendously useful in the narrow utilitarian sense. It allows us to do business in the marketplace of people, products, and services.

Where technical knowledge may become problematic, however, is when it does not allow for the expression of a deeper involvement in those events that define our relationship to the cultural or natural world around us. Taking an examination, for example, is often a traumatic cultural ritual—and is so designed. Yet as technical knowing, it is simply what one writes down to be graded. Taking an examination in the fuller sense involves fantasies of success and failure, anxiety, studying and memorization, and later, much forgetting. But this is not what is suggested when we say we got our exam back.

Grounded Knowing's Continuity, Connectedness

Quality of life is importantly related to how we experience ourselves involved in the fundamental flow of significant occasions. This deeper or grounded quality of knowing allows us to feel a connectedness and continuity with the complex natural and cultural relationships in which we are always enmeshed. In a culture such as that of the Hopi Indians, who celebrate the inner-connectedness of all aspects of nature, one may feel in an almost palpable way the fullness of the world's coming into being. Hopis are not only on the outside making things happen to the world; they are also on the inside participating in the happening.

Certainly this sense of connectedness between individual and culture and culture and nature (experienced as unitary occasions) leads one to the postmodern insight that there are layers of knowing or degrees of abstraction from a full or grounded human experience. These layers might extend from simple vague feelings of comfort and discomfort, to intuition, to the



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imaginative translation of feelings and intuition into images, stories, and objects, and the framing of stories with theories and/or a sense of history; and even the critical analysis of stories, theory, and history through philosophy and metaphysics. Much of Whitehead's work, often referred to as "process philosophy," is an elaboration of this continuum of experience, which provides "depth" as an important dimension. In Whitehead's process thought, our cognitive ability, our ability to describe the world in precise qualities such as time, shape, color, and so on, which can be separated from the things to which they apply is, as he says, a "high abstraction."

The primitive form of physical experience is emotional. . . . In the language appropriate to higher stages of experience, the primitive element is *sympathy*, that is, feeling the feeling in another and feeling conformally *with* another. We are so used to considering the high abstraction, "The stone is green," that we have difficulty in eliciting into consciousness the notion of "green" as a qualifying character of an emotion. Yet aesthetic feelings, whereby there is pictorial art, are nothing else than products of the contrasts which are made possible by their patterned relevance to each other. The separation of the emotional experience from the presentational intuition is a high abstraction of thought. Thus the primitive experience is emotional feeling, felt in its relevance to a world apart (1929/1978, pp. 162-163).

Whitehead's view of experience and reality is not unlike the distinction made earlier by such scholars as F.S.C. Northrop, who talked about the "undifferentiated aesthetic continuum," or the more direct, intuitive apprehension of meaning often associated with Eastern cultures. This is then contrasted to the highly differentiated conceptual-theoretical apparatus we associate with modern Western science.

One does, however, occasionally find Western scientists speaking about their knowing in less analytic, superficial ways. An example of this is in the research of Nobel laureate Barbara McClintock, which involved years of being close to, growing, and observing corn. Evelyn Fox Keller describes in strikingly process terms the intimate relationship between McClintock and her kernels of corn.

For all of us, our concepts of the world build on what we see, as what we see builds on what we think. Where we know more, we see more. But for McClintock, this reciprocity between cognitive and visual seems always to have been more intimate than it is for most. As if without distinguishing between the two, she knew by seeing, and saw by knowing. Especially illustrative is the story she tells of how she came to see the *Neurospora* chromosomes. Unwilling to accept her failure to see these minute objects under the microscope—to pick them out as individuals with continuity—she retreated to sit, and meditate, beneath the eucalyptus trees. There she "worked on herself." When she felt she was ready, she returned to the microscope, and the chromosomes were now to be seen, not only by her, but, thereafter, by others as well.

If this were a story of insight arrived at by reflection, it would be more familiar. Its real force is as a story of eyesight, and of the continuity between mind and eye that made McClintock's work so distinctive and, at the same time, so difficult to communicate in ordinary language.

Through years of intense and systematic observation and interpretation (she called it "integrating what you saw"), McClintock had built a theoretical vision, a highly articulated image of the world within the cell. As she watched the corn plants grow, examined the patterns on the leaves and kernels, looked down the microscope at their chromosomal structure, she saw directly into that ordered world. The "Book of Nature" was to be read simultaneously by the eyes of the body and those of the mind. The spots McClintock saw on the

kernels of corn were ciphers in a text that, because of her understanding of their genetic meaning, she could read directly. For her, the eyes of the body were the eyes of the mind. Ordinary language could not begin to convey the full structure of the reading that emerged.

Evelyn Witkin's description of how her own understanding had developed, by looking over McClintock's shoulder, is further illustrative. Looking at the material, guided by McClintock's running narrative, she, too, learned to "actually see the genes turning on and off."

In order to "see" what McClintock "saw," Witkin had to learn more than a new "language"; she needed to share in McClintock's internal vision. In that sense, "seeing" in science is not unlike "seeing" in art. Based on vision, our most public and our private sense, it gives rise to a kind of knowledge that requires more than a shared practice to be communicable: it requires a shared subjectivity (1983, pp. 148-149).

Implications for the Classroom

The implications of Keller's observations of McClintock's work for curriculum and teaching suggest how difficult it would be for either a McClintock-type teacher or student to survive in a modern school without considerable efforts at remediation. Science certainly is not construed as creating an intimate relationship with various aspects of nature. It is rather

Photograph by Betty Buchignani, Memphis, Tennessee



To hear a teacher talk about the animal kingdom in a classroom pales in comparison to the actual experience of seeing, touching, even communicating firsthand with an animal in a setting that encourages "participation in an occasion."

seen as learning objective methods of observation and experimentation that keep the observer quite removed from his or her objects of study or the data that describe them. The particular kind of consciousness or experiential quality of knowledge science encourages is explicit, clear, and superficial. It also lends itself smoothly to division into curriculum units. The frog we cut apart in the school biology laboratory, for example, is not introduced as a significant, intimate neighbor in our universe or on our planet. It is not even "alive." It merely provides useful data to illustrate such technical concepts as "circulatory system" or "the anatomy of amphibians."

Or consider a 1st grade assignment given out in a local suburban school. First, the students are to read the following story:

Last June I planted my seeds. A long green vine grew. Orange flowers grew on the vine. Each flower will become a pumpkin. I can give pumpkins to my friends.

Next they are instructed to read the following sentences, cut them out, and paste them in the right order:

- Then orange flowers grew.
- A long green vine grew.
- The flowers will be pumpkins.
- I planted some seeds.
- I will give pumpkins away.

The major purpose of the exercise is to teach the children to order temporal events. Most likely they have never participated in these events (planting pumpkins, watching the flowers turn into pumpkins). The children are not encouraged to hold a pumpkin, to feel a pumpkin, to feel like a pumpkin. There is no effort to present the mystery of birth and life and death and rebirth involved in the five-line story. The story could be a drama; it could be visual; it could have smell and taste. It could be a dance. The kinds of participation in "pumpkinhood" are even more plausible given its association with feasting (Thanksgiving) and the mystery of the spirit world (Halloween). Yet here it is used in a very isolated way to teach children how to order five events in a series. The con-

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sequence of understanding this order has little to do with eating or celebrating. It has only to do with how a student tests on something called verbal comprehension, a "skill" that will presumably allow him or her to interpret technical information and cope in a highly verbal abstract culture.

In a curriculum of grounded knowing, children might see the planting and germination of seeds or the growing of plants as more than the normal science of objective events carefully dated and recorded. The events could be seen as significant occasions that provoke the most profound qualities of wonder and questioning. One might ask, for example, if we participate in the planting of the seed and the watering of the seedling, are we part of the plant? Is there something of our "selves" in the plant? Does the plant move upward to be near us or near the world we share with it? Or even, do plants move at all?

One can easily imagine the germination of a seed being translated into a dramatic-musical occasion. The seed swells and expands; roots emerge and grow down; a small primary leaf comes forth and grows upward toward the light. (Is this the reason it grows upward, to be near the light?) The tiny

plant may be threatened by "bugs," or it may "feel" someone walking overhead. If we dance these adventures of the plant, do we say the plant is dancing only through us, or can we say that the plant is really dancing?

After this kind of experience, there are a host of other feelings and questions to explore.

• The roots grow downward into the dark earth, and the leaves grow upward. How do we as humans feel about the dark underground and the sunlight as places to be? Does the plant feel the same way?

• Are humans "rooted" in any way similar to plants? Are humans "freer" than plants?

• Can plants communicate? The plant responds to sunlight and moisture—is this communication? Does the plant feel loved when it is taken care of—as a human child, for example?

The teacher might tell the children stories about how other cultures view plants and the relationships they have to plants—that the Hopi Indians, for example, participate in the growing of corn by chanting, singing, and dancing. Western scientific experiments suggest that talking to plants and encouraging them to grow makes a difference in their lives. Would talking to plants also make a difference for the people doing the talking—in the way they felt about the plants, in the way the plants tasted when eaten? The children might come to talk to or sing to their seedlings.

The distinction between these two educational approaches (the technical, knowledge-as-separated object approach vs. the grounded, knowledge-as-intimate relationship approach) can also be illustrated further by the way we usually teach music. Rhythms and sound are certainly primal experiences. The fetus experiences the rhythm of the heartbeat and the breathing of the mother before it is born. It experiences its own sound at the moment of birth. Children are famous for the rhythm, dance, and music spontaneously generated in their own play. Yet when we teach music, often it is as though a whole repertoire of these musical activities and experiences never occurred. As David Keane states:

When we begin music instruction we assume that "music" is a body of knowledge which exists independent of people and that the acquisition of musical knowledge may be carried on only with the assistance of a person who possesses a great deal of musical knowledge. Such assumptions are unfortunate because the most important aspect of the art is the direct experience of the art object. Secondary information is more often misleading than it is helpful unless the perceiver already has a thorough experience of the art object itself.

We come to "know" an object through our direct interaction with it. If we pick up a stone, squeeze it, rub it, weigh it, and so on, our understanding of the stone is the record of these operations.

If this is the process by which we also learn music—and there is considerable evidence to support this idea—the rigidity of traditional music instruction with its complete disregard for personal exploration and its dogmatic clinging to a skill-development basis for musical comprehension actually impedes the development of some kinds of experiential musical knowledge (1974, pp. 333–334).

The Concept of Presence

At this point, as a teacher and curriculum analyst, one must question the simplistic single-level conception of curriculum that commonly characterizes our modern understanding of how and what children learn. Learning outcomes are routinely reduced to behaviors, skills, or facts, which children are to learn, remember, and use.

We might better be concerned about including in our schooling a quality of knowing that is tied, not to an observing mind (somehow located in our heads) and a set of external facts out in the world (as in the old mechanistic Newtonian view), but to the notion of moving both self and becoming-actuality into a common presence, which literally means our sense of feeling before our analytic capacities delineate the object-filled world of preinterpreted things. The notion of *presence* contrasts sharply with *fact*, which, from its Latin origin, stresses the finality of completion—that which has already been made or done, rather than the process of entering into a shared moment of understanding, a shared occasion. (School is mostly about these completed entities called facts: number facts, geography facts, spelling facts, science facts, history facts, the facts of a song to be sung.)

If teaching were as easy and straightforward as transferring pieces of hard information from one person to another, we would have far more success in this enterprise than we do at present.

To begin some of our teaching with the sense of entering a shared moment with others, with the primary goal being to participate in an occasion rather than learn a set of well-defined facts, suggests that we find a place wherein there is both a special human sensibility and a significant natural happening. The term *presence* also suggests that we are aware of a realm of understanding in which our whole body participates before we have interpreted and objectified the world with our native sensibilities. One might speculate, for example, that McClintock *felt* the presence of the Neurospora chromosomes before she actually saw them—which explains her persistent looking.

At the risk of adding to an already overloaded dictionary of educational jargon, we would argue that the word *presence*, or some term like it, is much needed to rescue this grounded quality of experience so that we might encourage it in the schools. We might think, for example, about the educational significance of the *presence* of a mother and a new baby, visiting an older sister or brother in school, or the *presence* of death when the class hamster dies, or the *presence* of a new leaf, emerging when a bean seed germinates. The

purpose of education might then include not only the dualistic notion of "bringing facts to mind," but also of creating occasions when children and teachers might find special moments or special times and places where something simply happens in a shared relationship between self and nature as a single entity. We might then accept the notion that such happenings include more than the abstract descriptions of literal facts. The presence of a song actually sung, for example, is more than text, more than notes, more than sound waves or the acoustics in the room, more than the children singing, and this "moreness" is a presence that may or may not happen each time the song is performed.

Moments of Shared Understanding

Modern teaching commonly begins the process of "coming to know" from the outside. Skills, concepts, and subjects are objects, so to speak, outside the student, possessed by the teacher and "given," as it were, to the student. What transpires is not a moment of shared pattern or shared relationships—the deeper sense of reality that postmodern science invites us to contemplate. It is an object, a word, a product, or a theory that can be written or diagrammed and tested. Such a construction of teaching/learning is based on our predominant modern mode of being—the sense that the world is made up of sentient minds and hard objects. Using this mode of being, we can create incredible feats of technology manipulating the objects (from petroleum to genes). But in a more unitary realm of being, where consciousness interacts with and affects events in ourselves and in nature (as when we sing to plants or smile at and greet a stranger), we can commit terrible errors of understanding.

Quite simply, we have limited ourselves unnecessarily to the single mode of being/knowing that came out of the mechanistic model of 18th and 19th century physics. If teaching were as easy and straightforward as transferring pieces of hard information from one person to another, we would have

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far more success in this enterprise than we do at present. A more nearly adequate way of thinking about learning/knowing, perhaps, requires that there be moments when the separate participants in an occasion—teacher, students, material, classroom—to use a biological-physics metaphor, “collapse in an interaction,” as happens when a photon of light and a green leaf participate in photosynthesis.¹

In such a “collapse,” the essence of reality becomes a relationship between self and other, between the subject and the facts “out there,” rather than simply our observation of the “out there.” Obviously schooling cannot consist exclusively of such “occasions,” but the great preponderance of technical knowing planned and engineered by teachers and curriculum makers might well be informed, even inspired, by a modicum of postmodern consciousness in which we provide for, watch for, allow for, a kind of learning and knowing that springs from a presence; those moments when nature and self come together and construct their own lesson, their own moment of shared understanding. □

¹This phrase was found in G.A. Riggins, (September 1982), “Quantum Physics and Freedom in a Whiteheadian Perspective,” *Zygon* 17, 3: 261.

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