

A Supradisciplinary Curriculum

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A few days ago, an algebra-teaching friend of mine heard a familiar question from that storied “voice from the back of the classroom.” “What good,” said the voice, “will quadratic equations do me?”

“I don’t know,” she answered, “but isn’t solving them fun?”

My friend told the story with a hint of pride. She obviously felt her response was an effective put-down.

A good many teachers share my friend’s educational perspective. Wrapped up in their disciplines, their work is inherently satisfying. Whether what they teach bears on life as it’s lived isn’t a matter to which they give much thought. Algebra, world history, chemistry, government—the courses are in the catalog. From that fact, all else—books, lectures, demonstrations, homework, exams—follows automatically.

Most teachers, of course, can offer some sort of rationale for the study of their fields. My friend believes that studying algebra is “good for the mind.” Pressed, she might even be able to lay out some sort of scenario in which a familiarity with solutions to quadratic equations came to someone’s rescue. But an objective observer of American education would surely conclude that much of what takes place in our classrooms is ritual. It doesn’t pass the “real world” test. To the question, “Does this help me make more sense of my experience?” the answer is, “No.”

Strange how little academic attention is directed to immediate experience. If I were asked to describe the present moment—something I can’t recall ever being asked by a teacher to do—I’d probably say, “I’m sitting at my desk, trying to write a piece for the 1995 ASCD Yearbook.”

True. But not even close to a thorough description. “Sitting at my desk, trying to write,” doesn’t begin to encompass what’s happening here at this moment. I touch the keys on my computer keyboard. Switches close, the closings are converted into a data pattern inside the keyboard, the coded signal passes through a cable to the computer, the computer interprets the code, stores it as the next item in a sequence in memory, and generates a character pattern for the monitor. This character pattern passes through another cable where it turns an electron beam off and on. When the beam is on it stimulates a phosphor coating on the back of my monitor screen, making it glow.

I’ve still hardly scratched the surface of what’s happening. As I write, I glance beyond the monitor, out a window, past the branches of a hickory tree, across the Indian River. A mile out, a tug is pushing a fuel oil barge up the Intracoastal Waterway toward an electrical generating plant a few miles north. I stop thinking about what I’m writing and wonder for perhaps the fiftieth time how long it takes the bow wave of a vessel in the Waterway to reach my dock. My thoughts move from that to the generating plant where the oil will be burned. Decades-old

memories return about Babcock and Wilcox boilers and General Electric steam turbines and generators in a plant in Ohio where I once worked.

I think, momentarily, about the oil being converted to heat to produce steam to power turbines to rotate generators to generate electricity to come back down transmission lines along U.S. Route 1 to power my computer. “Up the river, back down the road.” Sounds like a country music song title, I think, as a Regulator clock in another part of the house strikes nine times.

And there’s much, much more. I wasn’t conscious of it as I wrote those paragraphs, but part of my experience was the room’s temperature and humidity, the faint throb of the tug’s diesel engines, the angling of the sun through the open, river-facing windows, a lingering taste in my mouth of a sip of tea. . .

How do I begin to understand—make coherent—such varied experience? Even the tiny slice of space and time I think of as immediate contains so many elements that merely cataloging them turns out to be an overwhelming task.

At the deepest level, understanding involves the recognition and interpretation of patterns, regularities and relationships in sense-acquired data. But that highly-abstract knowledge seems of little practical use as I attempt to interpret this moment.

That’s right, says the educational establishment, it is of little practical use. If I want understanding, the establishment says, the way lies through the academic disciplines. The various physical sciences have answers to questions about computer technology, steam powered turbines, electrical generators, bow waves, spring-driven clocks and such. Botanists can tell me why my hickory tree, coming late to leaf, allows me each spring several extra weeks of unobstructed view of the river. If I want to know why my thoughts move from the present to old memories of Babcock & Wilcox boilers and General Electric turbines, perhaps the discipline of psychology can help. Physiology should have something to say about the taste of tea and my hearing of the diesel engines and the clock chimes. Chemistry can tell me about grades of fuel oil, possible corrosion problems in my clock from being near salt water, and perhaps could also add something to the psychologists’ comments about memory processes in my brain.

Somehow though, in my search for understanding of present experience, this approach doesn’t help much either. Merely identifying the bits and pieces of immediate experience is daunting, and grasping at a working level all the disciplines related to those bits and pieces is out of the question. Even if I had such a grasp, the parts of my experience I could identify wouldn’t add up to a meaningful whole. And, although I’m convinced that the reality I experience is systemic (coherent?) I can’t think of any useful way to connect the taste of tea to seasonal changes in my hickory tree or the path that electrical impulses take through my computer. We just don’t deal with experience by slicing it into parts that correspond to the academic disciplines.

Perhaps I should note, parenthetically, that a great many scholars are certain that their disciplines can and do encompass and relate all experience. I don’t think they realize that the only aspects of reality they’re mentally processing are those for which ordinary experience and their disciplines have given them a conceptual model.

Understanding of the sort daily life demands doesn’t come from the disciplines. Individually, they lack comprehensiveness. Collectively, they lack coherence.

Well, how **do** we make sense of experience? The answer is so simple and obvious we've overlooked it, and when it's pointed out, pedants are often unwilling to take the explanation seriously.

We make sense of experience—make it coherent—by breaking it into intellectually manageable pieces, pieces we refer to generally as occurrences, events, incidents, accidents, happenings, movements, situations, things, actions, eras, ages, “this moment.” When we want to be more specific, we give these parts of reality more precise conceptual labels: wars, volcanic activity, elections, chemical reactions, marriages, writing articles. When we want to be even more specific, we name the parts: The Battle of Bull Run, Mt. St. Helens' eruption, Woodrow Wilson's margin of victory, the World Trade Center bombing, “that Charles and Di thing,” a piece for the 1995 ASCD Yearbook called, “A Supradisciplinary Curriculum.”

That done—the “what” identified—we fill in the picture with answers to the other four simple questions high school journalism students know so well: Who was involved? When did it happen? Where? Why? Understanding a particular experience requires information about (a) time frame, (b) setting, (c) participant actors, (d) action, and (e) cause.

Some readers may prefer that I word it differently: There is a perception of coherence in the elements of a particular segment of reality when, in relation to that segment, data are presented which (a) provide an image of a milieu sufficiently detailed to identify its component elements' relationship to events within it, (b) identify actors on the basis of characteristics related to their actions and cognitive state within the segment of reality, (c) posit or imply actor cognitive state(s) leading to meaningful actor action, (d) describe actual physical movement growing out of or consistent with actor cognitive state, and (e) fix the whole in appropriate time parameters. The criteria for inclusion of any particular element or characteristic of milieu, actor, cognitive state, or action in an account of a particular segment of reality is the extent of that element or characteristic's systemic relationship to other elements in the system, the question being whether or not that relationship is sufficient to cause change, and if so to what degree, in one or more of those elements.

As I said: Experience is coherent when we know who did what, when, where, and why.

Some will think I'm belaboring the obvious; others, that I'm laying out an approach to curriculum at a level of sophistication appropriate only for small children.

Nothing could be farther from the facts. The purpose of general education is to make sense of human experience. “Making sense” means expanding our awareness of patterns, structures, and relationships of, within, and between elements of reality. We perceive reality as having five distinct components, each of which exhibits myriad patterns that we sense and convert into a mental model of reality. The five are setting, actors, action, thought, and time. Each is a starting point for an incredibly vast conceptual framework, a framework that encompasses and organizes everything we know. The exploration of possible relationships between components of these frameworks is the basic process underlying the expansion of human knowledge.

When I say that each of the five is a starting point for a vast conceptual framework, I mean nothing esoteric. For example, in our attempt to understand the environment, we use the concepts “primary” and “secondary.” If we move out from the “primary” conceptual branch, climate is one of a half-dozen or so further branchings. Climate, in turn, has its own elaborate

system of branches, of which wind is one. One of wind's many conceptual branchings is trades, and one of trade winds' branchings is direction. All concepts related to the environment—thousands upon thousands of them—are thus organized and related.

For ease of understanding, I've illustrated conceptual branching using familiar ideas—reality> environment> primary> climate> wind> trade winds> direction. But I don't want to leave the impression that what I'm advocating is mundane or commonplace. There's nothing mundane or commonplace about the myriad conceptual branchings of thought or action. We are what we think and do, yet how many university graduates could explain with clarity their culturally determined assumptions about causation? time? physical reality? self? How many university graduates could summarize the implications and ramifications of their native society's patterns for ownership? Do the same for patterns for decision making? for distributing and exchanging wealth? for acquiring and displaying status? Everybody knows a little about each of these, but the traditional curriculum doesn't come close to providing a working level of understanding of the powerful role they play in everyday experience.

The conceptual branching of reality that begins with environment, actors, action, thought, and time encompasses the mundane—and everything else. Nothing that's presently being taught in any classroom in America falls outside the boundaries of the conceptual framework. Nothing about which we know is excluded.

But human experience can't be understood merely by labeling its parts, locating them on a conceptual framework, and studying them in isolation. The interactions **between** the parts and the resulting systemic changes must be explored. If, for example, the direction of trade winds affects the growing season, the growing season affects crop yields, crop yields affect levels of wealth, levels of wealth affect economic patterns, economic patterns affect political stability, and political stability affects who lives and who dies, it follows that that string of relationships is important and should be understood. If ideas about causation affect medical research initiatives, medical research initiatives affect treatment modes, treatment modes affect mortality rates, mortality rates affect intergenerational competition for resources, and intergenerational competition for resources affects societal stability, it follows that that string of relationships is important and should be understood. There are hundreds of thousands, no, perhaps an infinite number of such relationships. The more we're aware of them, the more our experience makes sense. That's what coherence is all about.

In between the very general concepts of pattern and structure, and the highly specific concepts that are the tools of the academic disciplines, lie the middle-range-of-generality concepts that we use most frequently in dealing with ordinary experience. About 50 of them at the level of generality of climate—concepts such as resources, work, self, gender, emotion—take in most aspects of perceived reality. About 30 more, drawn mostly from general systems theory—concepts such as element, feedback, lag, cause—help us think about relationships and interactions within and between the 50. Together, these 80 or so concepts make up most of our model of reality. They are the framework of a supradiscipline.

This supradiscipline is implicit in our thinking. It's imbedded in our language. It's the conceptual organizer of communication. If we'll make our supradiscipline explicit, we'll have the basis for a curriculum that's comprehensive and totally integrated—exactly as comprehensive and integrated (as coherent) as the experience it represents.

Consider some of the benefits of formal adoption of our model of reality from the perspective of various schools of thought on the curriculum:

Some educators think that instruction should be student-centered—concerned with self-understanding, self-image, individual needs. Despite the philosophical soundness of this view, it hasn't had much of an impact on the curriculum, probably because the philosophy hasn't been adequately translated into program. Can this be done? Yes, but not by asking students what's on their minds, or by pursuing the latest fad in pop psychology, or by looking for intersections of student concern and the academic disciplines. The deepest student needs lie below thresholds of awareness, beyond most students' abilities to articulate them without help. They need to see themselves in cultural context, need not merely to look at themselves but to look at themselves looking at themselves. Our culture's model of reality makes that possible. Its categories and subcategories give teachers who are committed to student-centered instruction a comprehensive, inexhaustible outline—a supradiscipline—to guide instruction.

Another group of educators believes that education should be society centered—concerned with social problems, democratic citizenship, social responsibility. The deep-seated societal drive to survive makes this approach no less sound than a student-centered approach to curriculum, but it hasn't enjoyed much success either. Again, that's probably because philosophy hasn't been adequately translated into program. Society-centered approaches tend to be superficial, narrow, media-driven, concentrating on the immediate and the obvious, reflecting rather than anticipating social problems and the changes that create them. Nowhere in the traditional curriculum are students helped to see that societies are complex systems, no major parts of which can be understood in isolation. But they can get that kind of understanding, and they can get it using the same model of reality that can give order and substance, depth and breadth, to student-centered instruction.

Yet another group of educators sees in multicultural education a broad scheme for curricular organization. They point out that the study of other societies is a prerequisite for understanding ourselves and our own society, that it shows us the myriad ways it's possible to be human, that it tells us how other societies have successfully dealt with or avoided problems similar to those we face, and that it's essential to the making of sound policy in all matters involving humans. Unfortunately, most multiculturalists have fallen into the same “can't see the forest for the trees” trap as many historians. Preoccupied by the particular, they pile fact upon fact about this or that society or group, and students never grasp the conceptual framework that served as the basic criteria for fact selection. When the hundreds or thousands of facts they've learned are forgotten, prove to be wrong or become irrelevant in the face of social change, they've nothing left.

What should multicultural and ethnic studies educators be doing? Helping students devise a universal model appropriate for the study of any society or culture, anywhere in space or time. The facts can still be taught, but they should be means to a far more significant and permanently useful end.

Where does a “universal model” come from? Once again, it's our model of reality, our supradiscipline.

Finally, there's that largest group of educators—the disciplinarians. Have they anything to gain by familiarizing themselves with their own society's model of reality? Yes, a great deal. The model allows them to put their disciplines in larger perspective, with a likelihood that

changes in organization and emphasis will follow. It allows their students to connect what they're learning in other discipline-oriented instruction, creating a self-reinforcing structure. It suggests nearby conceptual territory that isn't yet but that might be made a part of the discipline. It helps focus attention on conceptual structure in the face of the diversionary attractiveness of facts for facts' sake. It provides a powerful means for tying mathematical, linguistic, and graphics skills activities to matters of significance. And the model serves as a constant reminder of the systemic nature of reality.

The benefits of making our implicit model of reality explicit and using the resultant supradiscipline to select, organize, and integrate knowledge aren't limited to the model's ability to help educators do better what they're presently attempting. *Making our model of reality explicit allows us to examine, criticize and change it, creating a base for a quantum leap toward freedom.* The model provides a formal cognitive system for organizing, and thereby making more accessible in memory, all thought. It permits the creation of a much more compact general education curriculum, thereby freeing instructional time for student specialization. The model makes it clear that specific instructional content is mere means to the larger end of building conceptual structure, defusing paralyzing conflict over the canon and other materials and specific facts. The model's conceptual nature assures that the curriculum constantly evolves—a near impossibility when the content of instruction is specific “cultural knowledge.” And its emphasis on the systemic nature of reality makes it extremely difficult for its users to oversimplify human experience.

Finally, a formal model of reality with its elements clearly identified encourages the exploration of relationships between those elements. The whole thrust of education then can change from its present static emphasis on student retention of existing knowledge to an emphasis on the dynamic creation of new knowledge.

We can cope with a little incoherence—can even find it delightful. When Nabokov and Marquez juxtapose in odd ways the elements in our model of reality as they did in their novels *Invitation of a Beheading* and *A Hundred Years of Solitude*, the resulting disorientation is stimulating and thought-provoking. But when we're trying to understand human experience as we confront it moment by moment, we want it to be coherent.

And it is. But the curriculum we've fashioned to disclose human experience to students isn't coherent. And it won't be until we recognize the supradisciplinary conceptual framework we use to make experience coherent and make that framework the organizer of the curriculum.

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