Experiences using *Systems-Based Learning* materials*

By Dr. William Webb

The Center for Educational Options is a small alternative education program in rural Henry County, KY. Like many alternative schools and programs in Kentucky, our program is heavy with students who have given up on schooling. Frustrated and often angry, these students come to us as in-school drop-outs, present in body (because the law requires it), but absent in spirit.

Our alternative education setting re-engages a large percentage of these students with an approach that fosters a sense of community while teaching a set of social skills (communication and assertiveness, emotion-management, problem-solving, conflict-resolution and working in groups) known to be central to positive, successful work and community interactions. (This program is called Discovery. Those interested can learn more at www.thediscoveryinstitute.com.) Teaching life skills in the context of community takes advantage of innate needs for belongingness, competence and efficacy. As such, students understand intuitively that the skills they are learning are useful and meaningful. More difficult, however, is offering our students the "required" academic subjects in a way they find useful and meaningful. Marion Brady's curriculum can do that. An illustration:

Following Marion's curriculum, we introduced our students to the notions of "patterns" and "connectedness" and the dynamics of "systems". To realize these concepts, the students decided to acquaint themselves in a more mindful way with a small commons area located between our building and the high school. Working in teams of 4, the students were first asked simply to describe the area linguistically. The students were mildly surprised to realize that a simple verbal description was not simple at all. The boundary of the area was established beforehand, and yet descriptions varied considerably from group to group. Landmarks that seemed important to one group were virtually ignored by another. Estimates of distance were wildly inaccurate. Words chosen to describe some aspect of the environment were imprecise and vague ("There's a small hill a little bit behind our trailer that's pretty steep."). Listening to each group's verbal descriptions, no one needed a curriculum or assessment expert to define the "lesson targets". The important questions were obvious. How do we account for the differences in descriptions? How do we reconcile these differences to come to a shared "perception" of our environment? Why is it important to be precise in describing our surroundings? How do our differing perceptions of our immediate surroundings influence the way we interact with each other?...and a host of other questions that were asked and answered in the follow-up discussion to this "simple" exercise—and this sort of interaction is the norm with the "*Systems*" curriculum.

Moreover, student involvement during this discussion was profoundly different from the typical high school classroom interactions. Freed from the cognitive task of memorizing facts, our

* Dr. Webb was using *Connections: Investigating Reality*, now retitled *Introduction to Systems*. Activities he cites are included in the retitled course—ed.

students argued and conceded and elaborated and prioritized and paraphrased and deduced and just about every other verb that the Bloom taxonomists say are important illustrators of learning. And they were doing it in the context of an authentic task with real-life implications.

Once the students had settled on a verbal description of the commons area, they were asked to draw a diagram of the area *to scale.* Not one student had any experience with that exercise. Most were math phobic, having been spectacularly unsuccessful in the math courses taught in the traditional classroom. But having spent the past few days thinking about their environment in a more mindful way, they were motivated to tackle this assignment. Armed with 50' tape measures, they had little trouble measuring the lines that defined the area's boundary. But connecting those lines in a scaled representation of the area presented some challenges. One challenge was the way one adjacent building jutted into the space the students were detailing. In order for the scaled drawing to come out right, the angle that the building "interrupted" the space had to be accurately defined—and it wasn't an obvious right angle. With no way to use a protractor, the students were stymied. Attempts to use their limited knowledge of geometry to find a mathematical solution were futile. Solutions on the Internet were too technical in their language to be helpful. And then, in a flash of insight, one student (whose math skills had been assessed by standardized testing measures as being in the lowest "novice" range) ran into the classroom and returned with a block of modeling clay which he proceeded to shape around the building's corner. Once he had "modeled" the angle in this way, it was a simple matter of transferring the angle to a piece of paper which could now be measured with the protractor. Voila!! The satisfaction this student felt at finding that solution and the affirmation he received from his classmates was a brand new experience. He felt smart. He was smart—and the *Systems* curriculum gave him a chance to demonstrate that smartness in a way the traditional curriculum never had.

One other example:

As previously mentioned, the students were asked to draw a scaled diagram of the commons area they had chosen to investigate. This, of course, was a ratio and proportions exercise most likely introduced to students in elementary school. But our math-challenged students approached the assignment as if they had been asked to prove the Pythagorean Theorem. A freshman girl (let's call her Kayla) with a neurotic aversion to all things mathematic, watched quietly while the other three (somewhat mathematically challenged) members of her group struggled to work through the steps for converting their measurements to the scaled drawing. After looking at their measurements and the size of the graph paper they were required to use, they decided that 8 feet of measured distance should be 1 inch on the drawing. There were dozens of measurements—2'9'', 47'3'', 9'4'', etc. The teachers were no help. The students were on their own to figure this out. Normally, Kayla tuned out when presented with an assignment from a math book, engaging in all manner of avoidance (and class distracting) behaviors. But this was different…a problem, for sure, but not *just* a math problem. So, Kayla listened differently and she watched as different strategies were tried, and then—she got it! ***"We gotta make everything inches, and then we***

have to divide by 96!'' She showed her group mates. It was a special moment and nearly impossible to describe. Normally a bit histrionic in her actions, Kayla seemed more centered, *more authentic*, in her excitement and enthusiasm at discovering this hidden skill. She was clearly enjoying feelings of competence that she rarely experienced in the school setting, let alone while doing math. She liked how it felt. She insisted on doing all the conversions herself, working without a break through part of her lunch period to finish.

I'm not suggesting, of course, that these sorts of learning experiences are unique to the "*Systems*" curriculum. But I am suggesting that the "*Systems*" curriculum, with its emphasis on creating the type of "sense-making" opportunities in which the brain strives innately to engage, provides a much broader landscape for their occurrence. For those truly interested in addressing the inefficiencies in our current educational system, this curriculum would be a sensible, doable place to start.

Dr. William Webb

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