



Journal of Developmental Education

Volume 16, Issue 2, Winter 1992

CUTTING EDGE: GOING BEYOND NINTENDO

by James E. Conner

If David Boulton can pull off what he envisions and has constructed, the educative process, as we now know it, will, at its deepest structure, be in for a complete overhaul -- from cradle to grave, from schools to universities to work-places to homes. And, in the process, the educator's heretofore unattainable dream of individualized learning will become a palpable reality. Needless to say, the impact on literacy training will be incalculable.

I confess that when I first heard David Boulton address a group of so-called futurists, I was reminded of the great 13th century Italian poet, Dante Alighieri. You may recall that Dante's description of hell proved so vivid that local citizens could only look upon him in awe, proclaiming that he, of all mortal, earthly creatures, had actually gone to and returned from the terrifying lower reaches. When I hear and peruse David Boulton (1990, 1991, 1992a, 1992b), I experience awe in a very different context. I get the impression that he is (very much at home) in the future, conceptually and physically, while the rest of us are stuck in some sticky time warp, looking on, in awe or perplexity or, more probably, both. I believe that Boulton is not only in the future, he has invented what will be the future in education. And on a scale as large or greater than that of Steve Jobs and Steve Wosniak who upon seeing the connection between computer and video went on to invent the personal computer.

First and foremost, Boulton is a revolutionary, albeit atypically, a quiet-spoken, hyperbole-eschewing one. He seems completely satisfied to move his audience with the sheer power of his ideas, demonstrations, and images.

Boulton (1991) evolved his theory of learning by observing how 3- to 5-year-olds were engaged in, and learned from, Nintendo games. Thus he was to enter the child's world in much the same way that Alice walked through the looking glass. In seeking "to understand what made the Nintendo experience so engaging for children", he discovered the "cycling rhythms of challenge, frustration, creative resource application, and renewal."

Although the toy, Nintendo, serves as one metaphor for his learning model, comparing Boulton's finished product to this ubiquitous game machine is like comparing a Lincoln Town Car to its precursor, the horse-drawn carriage. By exploring how a toy relates to a new order of learning, Boulton was led to construct and utilize a "learner-oriented" model that seeks to mirror how our nervous systems do, in fact learn. Learning, to be truly engaging he seems to be saying, really must be child's play. What he has attempted to do in effect, is to develop a technologic analogue of our neurological learning system. And unlike "Hal" in Arthur Clarke's 2001, the individual operator (learner or teacher) is in control.

To those who believe in magic and enchantment, even when they carry the label of science, this might sound like the stuff that dreams are made of. Boulton has, however, moved well beyond the dream and theoretical stage. He has progressed well beyond the prototype and is poised for piloting. His most mind-boggling magic is to be seen in his computer architecture. It has allowed him to compress massive amounts of information into a small "space" (ultimately within a hand-held box, projected to cost around \$200). Normally, to attain such power requires very powerful, expensive computers. The underlying electronic learning environment is "designed entirely from

the vantage point of a learner needing more while trying to understand and move through learning materials--a process that encourages learners to be sensitive to their own meaning needs and to critically employ them in controlling the environment"

Boulton (1990) explains metaphorically how his learning environment works:

Imagine an electronic microscope specifically designed for learning from information. A simple and economic device, designed to receive very special kinds of "slides" - slides that carry their own lenses.

Now, imagine that slide has two such sets of lenses --"multi-sensor" lenses. One set allows you the learner to look at the meaning of a "paragraph" from various points of view. The other set enables the learner to look at any word or term with various types of clarification or elaboration. A series of such slides would represent a course of study or data base.

When using such a slide, should the learner feel the meaning is unclear, he or she can select the combination of lenses that bring it into focus.

In addition to an innovative hardware component, system components provide a number of highly useful features:

1. The Learner Interface: Optimized entirely for the process of learning and applicable to virtually all subjects, the Learner Interface allows learners to adjust a continuum of multi-media materials to suit their own unique learning and comprehension needs.
2. The Authoring System: The learning materials are developed on the Macintosh by an authoring system which can support single or collaborative authors and teachers.
3. The Learner Diagnostic System: As a learner navigates through information, a path is recorded. Each time the learner encounters an unknown word, requires clarification of a point, or chooses to have information presented in an alternative learning style, his or her choices are captured. These selections are next interpreted by a diagnostic program,... which produces a "learning map" for the instructor, highlighting areas which may require more personal assistance.

In effect, the Boulton learning system seeks to establish reciprocity with individual learner's nervous systems, as they move linearly and nonlinearly through the system's electronic, icon-driven, multi-learning-mode learning environment. And, since both student and teacher are free to use the system's palate to create new materials and new options, the possibilities, for all practical purposes, are infinite. Boulton says we are beginning to experience a significant paradigm shift: from "knower" to "learner". We can, he declares, help students "exercise and extend" much more fully their capacities for learning whether the student be in engineering at Cal-Tech, medicine at Harvard Medical School, a second-grade science program, a GED program, a training program at General Motors, a university learning lab or an adult literacy program at a community college.

Paradoxically, Christopher Whittle—"admiral" of the flagship Edison Project, the grand scheme to build a vast enterprise of for-profit schools across America—articulates a vision not unlike that of Boulton:

Every kid in the late 1990s, Whittle says, will carry a lightweight portable "unit"—some futuristic interactive laptop allowing him to access information networks and teaching programs and multimedia "texts", allowing teachers to administer and grade tests, allowing parents to look in on homework and such. (Trueheart 1992, p. 1B)

To which Boulton would surely add, "Mr. Whittle, the future is now."

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