An Overture

Computers in Biology Education: Mindless or Mindtools

There are signs that a full-scale debate about the computer is developing. The contestants on one side are those who, briefly stated, believe computers CAN, SHOULD, and WILL do everything, and on the other side those who, like myself, believe there are limits to what computers OUGHT to be put to do. (Weizenbaum 1976).

The two most frequent comments that I hear about computers are (roughly): “I haven’t seen any software that I like,” and “I haven’t seen anything on the computer that I couldn’t do easier some other way.” Both of these seem totally counter to the heralded expectations for computers. This reaction has been around for at least 15 years. Oettinger (1969), former president of the Association of Computing Machinists, certainly sounded this warning:

I wrote RUN, COMPUTER. RUN not as a Luddite fearful of the Machine nor as a shrinking humanist living in the past, but as a scientist and engineer convinced that educational technology holds great promise. My aim in analyzing the myths, the oppressive self-delusions that make a mockery of technological change in education is not to deny the promise; but to rescue it from unmerited disillusionment. I say there are no easy victories, no quick answers, no panaceas. If we are to realize the promise, we must not allow our human and material resources to be diverted into showy changes in form that will continue to block change in substance . . . In short, computers are capable of profoundly affecting science by stretching human reason and intuition. . . . I suspect that the ultimate effects of this stretching will be as far reaching as the effects of the invention of writing. Whether the product is truth or nonsense, however, will depend more on the user than the tool.

Oettinger adds that computers had failed in education once before. Since the generation of computers that he employed also failed to transform education significantly, what can we say of the current generation of Apples, PETs, TRS 80s, and IBM PCs which predominate in educational classrooms today? Despite the technological gains in “user friendliness,” speed, memory, interactive capabilities and graphics (both color and detail), can we really say that we are either fundamentally changing what can occur in an educational environment or that we are making the computer suit our pedagogical desires rather than simply executing the possible (and frequently the easiest to program)? I believe that the answer to both of these questions is a resounding NO!

Nonetheless, in this issue, we hear from 13 authors about the software they have developed or used, why they developed what they did and how these developments related to their teaching. Thus, in addition to providing our readers with a survey of a large variety of quality software initiated by Crovello (1984), we have situated the discussion in terms of our own teaching and the incentives for involving computers in our classrooms and labs. Thus, in a sense, this whole issue is a how-to-do-it issue for teachers who are considering either purchasing or developing software.

References


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