Teaching Machines: Learning from the Intersection of Education and Technology

Ferster, Bill
Johns Hopkins University Press, 2014

Book Review

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I decided to read Bill Ferster's *Teaching Machines: Learning from the Intersection of Education and Technology* the summer that I offered my first online class. Ferster's book, while by no means a "how to," gave me much to consider as I entered this brave new world of online education. Ferster's book is a history of the various ways that technology has been employed in teaching. The dream that Ferster points out has always been "Fordist" in nature, a mass production dream which attempts to replace the classroom teacher with some sort of machine substitute that can deliver educational objectives with the same outcomes as a human with greater efficiency and less cost. The path, Ferster shows, has been littered with failure, not only because the goal is problematic but also because the endeavor is mired in capitalism and governmental economies. Educational technologies have been too expensive for schools and failures at making a profit.

However for those (like myself) engaged in using some form of educational technology, what is most striking about Ferster's history is how the same problems have repeatedly vexed those applying technology to education. First and foremost is the problem of scale. How does one go significantly beyond some thirty students? Humans seem to learn by making mistakes. Figuring out where a mistake occurs and how to correct it is a complicated process that is not easily amenable to technological intervention; there are simply too many variables. Second, educational technology seems most appropriate for a rather narrow range of educational subjects: remedial math, spelling, and grammar are particularly benefited. But higher-level learning tasks like understanding a poem, writing a research paper, or engaging in art criticism (to name but a few) are outside the purview of what technology can really accomplish. Third, there has been no real change in education that technology has created;

new platforms should create new ways of educating and not merely replicate the old ways in a different media. But thus far most technological solutions simply automate delivery of content in one form or another. The fact that much educational technology has no theoretical backing is related to this; there has been no clear advance in educational theory that technology can realize and often no educational theory at all has been considered in various programs and technologies. What is striking is that Ferster shows this is not just a problem with today's online education or cloud computing; rather from the earliest attempts to apply mechanical technology to education the same issues have arisen.

What Ferster's readable history shows, at some fundamental level, is a need to rethink the real capabilities of educational technology. Ferster is somewhat sanguine about the ability of big data and artificial intelligence to address some of the more technical roadblocks that have stymied educational technology. That said, the larger problem, which the book seems to only skirt, is that the utopian dreams of replacing the teacher with a technological facsimile significantly misunderstands the role the instructor plays in the learning process. There is at some level a connection between the instructor and the student that promotes learning, accountability, and responsibility -- which cannot be replicated by technology now and may never be. Ferster's contribution here is to make us think about these issues in a long historical view that highlights the real problems and promises of educational technology.

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