

Garelick, B. (2015). *Teaching Math in the 21st Century*. With an Introduction by Ze'ev Wurman. ISBN13: 978-1511632881 [book review]

Reviewed by Richard P. Phelps

Barry Garelick recently retired from a long career as an analyst for the Environmental Protection Agency. Probably most individuals toward the end of their careers prepare for a retirement of less work and increased leisure; Garelick attended evening classes to become a public school teacher. (Incidentally, he has written entertainingly about his graduate school experience in earlier publications.) He timed his teacher's certification to coincide with his retirement from the federal government, moved to the west coast, passed his California licensure examinations in mathematics, and started looking for work.

Teaching Math in the 21st Century lightheartedly journals Garelick's experience during a school year in which he substituted at two schools for full-time teachers on long leaves of absence. Each chapter is a short story about a day's experience with a teaching challenge, a challenging experience with a student, or experiences with parents, faculty, or administration. His chapters could sequence a slice-of-life television series about an ordinary guy with good intentions trying to do an essential job for skeptical kids who need him, hamstrung by an out-of-touch bureaucracy mostly posing impediments.

Teaching Math offers an important and, unfortunately, rare perspective on US mathematics instruction. First, Garelick was not socialized by education school doctrine while an impressionable youngster. He entered his graduate education program as an older adult having applied math in his everyday work in a technical (i.e., STEM) field. Unlike many math education professors, he really does know how and why math is used in real life. Through his experience-enriched perspective, some of the incessant innovations spilling from US education schools into our neighborhood public school classrooms can seem rather silly.

Second, Mr. Garelick questions the validity and practicality of many current education-school instructional beliefs and preferences, such as "explain your answer", "do not memorize or will not understand", "you can always look up facts (on the Internet)", "you don't need to know calculation algorithms (because calculators do that)", and "children only remember the knowledge they construct on their own". Fully

sharing his point of view, I propose that Garelick's eloquent "Introduction" about current education fads should be printed on parchment and nailed to the cathedral door.

Garelick is well aware, however, that despite all its professed admiration for "critical thinking", the education establishment can be shockingly intolerant of critical thinking within its own domain.

This leaves Garelick treading softly while on the job, looking over his shoulder, participating in poor instructional practices because he must (although this was more the case at his first sub assignment than his second), sometimes duplicating instructional practices in both the preferred, but ineffective, radical constructivist manner and then again through more traditional means so that his students may learn the material.

Garelick could live well enough on his retirement income, though. He wishes to teach because he enjoys it and because he can do some good. But, because he is not dependent on a teaching job for his livelihood, he feels free to express himself outside of work hours.

Here is how Brian Martin, an Australian expert on the too-common corruption of expertise describes it:

"To become an effective critic of establishment experts, I think the following are crucial:

- lots of hard work, in order to understand the issues and develop the critique;
- a commitment to accuracy, since critics are more easily attacked and discredited by errors than are establishment experts;
- a willingness and ability to take the arguments to broad audiences, especially through the media;
- persistence;
- courage to disagree with peers and to continue in the face of attacks;
- a secure livelihood.

"The last item, a secure livelihood, is far from trivial. Many potential critics are deterred because of worries about their jobs. The most secure position is one completely independent of the establishment

being confronted. ...The most risky position is to attack the establishment that provides one's livelihood."¹

I would add that not only are potential critics of the education establishment deterred by job concerns, they may be fired for their perceived heresies if they are not at first deterred.

But, that is all background. Most assuredly, the 26 short chapters of *Teaching Math* do not comprise a polemic. Rather, they describe the daily trials and tribulations of a new, dedicated, self-effacing, and open-minded teacher trying to reach kids despite their suspicion and reluctance.

Readers unaware of or uninterested in the background will still appreciate *Teaching Math in the 21st Century*. With fluid, engaging writing, Garelick provides what should not be a rarity, but unfortunately is. Few public school teachers write about their trade for public consumption, much less write as well as Garelick. With wry humor, he escorts us outsiders inside today's classroom to share what it feels like to be a public school teacher today, both the good and the bad.

For the many of you who barely remember algebra, I assure you that you can skip over the vignettes on particular problems and formulae and still appreciate the book for its universal truths and human interest. For those of you thinking of a career in teaching or in a STEM field, *Teaching Math* will be a special treat.

I hope that Mr. Garelick obtains the full-time position he seeks because he wants it and deserves it. But, I also hope that he continues to write. His perspective is unique, well expressed, and we need it.

¹ Martin, B. (1996). Conclusion, pp. 175-183, in Brian Martin, (Ed.) *Confronting the Experts*. Albany, NY: State University of New York Press, p. 108.