



Do We Need a Sabermetrics Revolution in Education?

James Paul Gee
Mary Lou Fulton Presidential Professor of Literacy Studies
Arizona State University

Does Education need its own sabermetrics revolution? Sabermetrics was a movement where amateurs demonstrated that official baseball statistics measured the wrong things. The new statistics came to impact the decisions of scouts, coaches, and the front office. The amateurs beat the experts and some of them got hired by the teams as a new class of experts.

Sabermetrics was an early example of phenomenon that is now pervasive. Thanks to new digital technologies, amateurs without credentials are competing in many different areas with credentialed experts and sometimes beating them. Everyday people are using digital design tools to make their own media, ads, news, science, and art. They are using computers to design objects of all sorts and printing them with new 3D printers and extractors. Businesses—but not yet schools—are asking their consumers to help them design and produce.

In another piece of bad news for credentialed experts, research with Big Data and better models for prediction have shown that in most areas—such as economics and policy—experts' predictions are no better than chance. Worse yet, experts' predictions often get worse with more data, not better, thanks to their false confidence in their disciplinary-favored generalizations. Networking amateurs and experts with diverse backgrounds and viewpoints with each other and with smart tools has turned out to be a better way to make predictions and even to make new discoveries.

Networking people and tools is done in the service of collective intelligence. A now well-known example is the video game *Foldit*, a game where players tackle the hard problem of protein folding. *Foldit* presents players with a model of a protein, the pieces of which they can fold by using a variety of tools. The game scores the player on how good of a fold the player has made. Scores are uploaded to a leaderboard, creating competition between players from all over the world. *Foldit* results have been published in prestigious science journals, including in the leading science journal *Nature* in a paper with thousands of authors, a first for the journal.

In official competitions *Foldit* players have in some cases beaten scientists' super computers in the search for correct protein structures. In 2011, *Foldit* players helped to decipher the structure of the Mason-Pfizer monkey virus (M-PMV) an AIDS-causing monkey virus. While the puzzle was available to play for three weeks, players produced an accurate 3D model of the protein in ten days.

Collective intelligence spaces like *Foldit*—or *Galaxy Zoo* where amateurs have discovered new types of galaxies unknown to professional astronomers—often come with an Internet interest-driven learning community where members mentor each other and design tutorials and curriculum for each other. Indeed, even part from collective intelligences spaces designed by scientists to let amateurs help scientists, the Internet is now full of what I have elsewhere called “passionate affinity spaces”, spaces where people organize their own learning around a passion and often become masters of a domain.

There are affinity spaces devoted to almost any topic one can imagine and they often now compete with experts for mastery but also with schools as exemplary learning spaces. For example, in one Internet learning community devoted to *the Sims* (the best-selling game in history, a family and community simulator), players have organized for each other a challenge where players have to enact the life of a poor single parent and then write a sort of graphic novel about the life they led and how the simulation tools had to be adapted to create a realistic life of poverty. This is a high-tech social studies assignment with a vengeance.

So are we measuring the right things in education? Do we need our own sabermetrics revolution? How are education experts and their predictions faring as we enter yet another round of standards, accountability, and reform? Are we empowering amateurs—including our students as amateurs—in education? Are we leveraging collective intelligence at the level of policy or research or, indeed, even in the classroom? In an age where people, young and old, want to be empowered makers and participants and not just passive consumers and spectators are we joining the “maker movement” in our schools and new standards?

The context in which we carry out discussions of educational reform is often very narrow. Yet we live amidst dramatic changes in a global world replete with risky interacting complex systems that threaten to destroy us. Global warming, environmental degradation, growing massive inequality, and rapid technological changes—for example new tools to redesign viruses and make new forms of life—all set a context that I argue is relevant to what young people should know and be able to do in the future, if they are to have one. It does no good to beat other countries at algebra if your school is under water or out of water thanks to global warming.

Education is fundamentally about making human beings—who, as we well know, can be quite stupid if left to their own fears and prejudices—smart. But in an age of complex crises and dramatic changes in technology and science don't we have to transform our ideas about what makes a person smart? In an age of amateurs competing with experts, people organizing their own learning, and collective intelligence, I would argue that it is time to see human minds not as individual smart devices put as “plug and play” devices that are at their best when they are collaboratively networked with other people with diverse skills and viewpoints and with smart tools all working together on hard problems. But if this is the sort of intelligence we want to produce—and maybe even need to produce to save our world—then we are clearly not now measuring the right things in education.

Big Data is one tool that will lead to demands to change how and what we measure in education and a tool, as well, that can help fuel our own sabermetric revolution. With new information gathering digital tools—tools that now even be embedded in objects and bodies—we will be able to measure growth across time in regard to multiple variables across millions of people. In the act we will discover diverse trajectories to mastery in different domains, we will use data to empower learners to theorize their own learning and problem solving, and we will use the same data, represented in different ways, to help teachers and leaders resource individual learners and smart networked teams. The “drop out of the sky”, single measure, one-day standardized test will be a relic. New standards—more attuned to and validated by the indigenous development of people and collaborative networks—will arise. Or, I should say, this will happen if we want

education to be a participant in the salvation of our imperiled world and not a spectator of its demise.

On experts and predictions, see Nate Silver (2012), *The Signal and the Noise—Why So Many Predictions Fail—but Some Don't*. New York: Penguin Press. For more on the ideas in this piece, see my book, *The Anti-Education Era: Creating Smarter Students through Digital Media* (New York: Palgrave Macmillan, 2013).