2016 Kieval Lecture Series

Dr. Keith Devlin, Stanford University
(aka NPR's "Math Guy")

What can you do with a math degree?

Thursday, May 12th, 3:30 PM, Science 151

The standard answer is, "Anything you choose." But what might that entail? I'll look back over my own career as an example. It started with research in logic, set theory, and the properties of infinite numbers. That led, in order, to: linguistics, mathematical cognition, evolutionary development of human mathematical ability, animal mathematical capacities, human communication, helping a large company increase its productivity, working for the CIA on a Post-9/11 National Security project, working for the US Navy on a surveillance drone-video project (a project that involved developing a mathematical analysis of the Christopher Nolan movie "Memento" and the children's fairy story "Little Red Riding Hood"), working for a US Army unit charged with keeping US soldiers safe, launching the first ever mathematics MOOC, and founding a video game company to build math learning video games. The thing that surprises many people is that I was doing essentially the same work on every one of those projects. I am a One Trick Pony! But my one trick is mathematical thinking. It doesn't solve all problems; in fact it solves hardly any. But it sure can make a productive contribution on most.

Too good to be true?
Unravelling the mystery of some recent studies of video game math learning

Friday, May 13th, 3:30 PM, Science 151

In his seminal 2003 book "What Video Games Have to Teach Us about Learning and Literacy", James Paul Gee observed that the features that make a video game successful are precisely the criteria for good classroom learning: engagement, challenge, exploration, goals, rewards, and a safe environment in which to try and fail. Turning those observations into successful learning games proved to be more difficult than most of the early game-based learning pioneers realized. Mathematics proved to be one of the most difficult areas for effective games, which is ironic given that all video games are built on mathematics.

Within the past couple of years, however, educators and game developers learned how to collaborate effectively, producing K-8 math learning video games that not only appear to work, but to work far better than even the most enthusiastic proponent ever expected. Two recent classroom studies from my own university found significant (up to 16% improvement over a comparison group on a written test) math learning outcomes after just 120 minutes of math-video-game play spread over one month, and similar results have been reported elsewhere. What do these results tell us? Should we even believe them? How were the studies constructed, and what were the written tests really measuring? Are we on the threshold of a revolution in K-8 math learning?

Also: Lunch hosted by the Math Club and Math Department:
Friday, May13th, 12:00-1:15 PM, Churchill 231

For more information, contact Dr. Kemble Yates: 541-552-6578, or visit:
http://www.sou.edu/math/kievel/kieval.html