

Former Schechter teacher launches math crusade

By Bret Silverberg
Special to the Advocate

For years he watched math teachers plod along. They used old textbooks and old teaching methods. To the students, math was just a bunch of formulas and rote memorization. To Shai Simonson, this combination did not make for a scintillating learning experience.

So Simonson, 51, wrote his own text – doing so while he taught algebra to middle schoolers at the South Area Solomon Schechter Day School from 2000 to 2008. “Rediscovering Mathematics” – geared toward middle school-level students – will be published by the Mathematics Association of America.

“I really redesigned the whole course,” Simonson said. “I didn’t really use any of the textbooks that are out there because they’re really not so good.”

Simonson’s text stresses context above all else. Through his teaching at Schechter, he realized that to grasp mathematics students need to see how it related to their lives.

“When a kid in my class would get frustrated and say, ‘What’s this all good for? I’ll never have to do any of this’ – to some extent they’re right,” he said.

He developed tangible examples for students so that they could better grasp the minutia of mathematics. For example, he asks them to calculate Michael Jordan’s hang time and determine the precise time when the hour and minute hands pass each other on an analog clock. “Mathematics tends to seem arbitrary,” Simonson said. “It tends to be a whole bunch of rules that don’t particularly make sense. It’s a mystery; there’s tons of memorization. ... Putting things in context takes away that mystery.”

Work on the book coincided with Simonson’s own area of research as a professor of computer science and mathematics at Stonehill College in Easton.

In translating a Hebrew mathematics text written in 1321 by Levi ben Gershon, Simonson found a few lessons to include in his book. Simonson’s research led him to Levi’s commentary on the Bible (Kings I Chapter 7 Verse 23). The

verse describes a ritual bath that is 30 cubits around and 10 cubits across, implying that pi, the ratio of a circle’s circumference to its diameter, is exactly 3, when in fact pi is closer to 3.14. Levi, knowing the correct value for pi is not 3 and loathe for the Bible to err, cleverly describes a way to interpret the text so that the Bible achieves a much closer approximation to pi.



Simonson

In his book, Simonson shows how Levi’s idea implies a connection between certain human body measurements and pi. Levi’s theory predates by 200 years

Leonardo da Vinci’s Vitruvian man, a similar theoretical approach to mathematical ratios in human body measurements.

Simonson said he might not have uncovered that Hebraic discovery had it not been for his part-time job at Schechter. “I might have done that if it wasn’t a Jewish school, but because it was a Jewish school I was particularly encouraged to do things like that.”

Simonson’s Schechter students, who were mostly honors level, ate his lessons up “like sharks,” he said. He handed out math puzzles and shunned old texts and the copy-off-the-blackboard technique.

“Nobody reined him in because we saw what he was doing and accomplishing and how well the kids were doing on standardized tests, how well they were doing in high school math,” said Jane Taubensfeld Cohen, head of school.

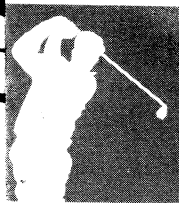
While Cohen said she would be interested in using his textbook, Simonson anticipates resistance from the math establishment. “A teacher that’s been teaching the same way for 20 years just doesn’t want to change. Anybody who’s been doing a job for a long time and does it fairly well is not interested in doing it a different way.”

Aiming to upend the way math is taught, Simonson is writing a grant proposal to the National Science Foundation to make his textbook the basis of a teacher-training program in Massachusetts.

“It’s harder to teach math the right way,” he said, “but it’s a disaster to teach it the wrong way.”

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