Mathematics for Today's World

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What mathematics will our students be taught in Los Angeles Unified School District? Since June 1999, district staff and School Board members have discussed and debated this question in an effort to improve students' mathematics achievement.

The School Board's imminent policy decision will impact both the lives of our students and the economy of our city.

How many roads to future education will be open to our students? Will they be prepared to compete in today's job market?

As professional statisticians who have been involved in national and local efforts to improve education, we observed many meetings of the LAUSD mathematics textbook committees this year. During these sessions, experienced classroom educators were pressured by a small group of pure-mathematics professors to narrow their focus and discontinue the district's use of integrated mathematics programs. Many of the teachers recommended that the district continue using the integrated programs, which build on a foundation of arithmetic basics to incorporate real applications, and in doing so teach students to reason with numbers and solve complex problems. This approach to mathematics education is advocated by professional organizations such as the Conference Board of the Mathematical Sciences (CBMS) and the National Council of Teachers of Mathematics (NCTM), with support from the American Statistical Association and other related groups.

Our society is dependant on data. To perform well in their future careers, students must know how to interpret numbers in the context of business, science, medicine, politics, and the arts. Parents who are concerned about their child's mastery of basic arithmetic should be equally, if not more concerned, that their child understand the basics of data analysis.

Let's do the numbers:

-Taking a high school Calculus course is no longer the only mathematics "gatekeeper" to college. The number of students taking the Advanced Placement Statistics test grew from 7,000 in 1997 to about 38,000 in
2000. (Source: College Board). That's more than a 500% increase.

-According to the Conference Board of the Mathematical Sciences (CBMS), high school graduates applying for jobs will find that many entry-level positions require training in Statistics.

-An article published in this newspaper reports that a recent survey of academic requirements found that 90% of today's "hot" job prospects involve a background in Statistics, while only 60% of jobs involve Calculus.

-At the undergraduate level, CBMS reports that the number of students earning degrees in Statistics is increasing by 40%, while the number of students earning degrees in Mathematics is decreasing by 9%.

-At the graduate level, the American Mathematical Society findings indicate there are almost as many mathematics Ph.D. degrees students today specializing in Probability/Statistics as there are in the next two most popular specialties (Algebra/Number theory and Geometry/Topology) combined.

Given the direction of the marketplace, where the ability to analyze data and solve complex problems is a priority, students will be poorly served by textbooks full of procedural drills and abstract proofs which, while they might prepare future researcher mathematicians, do not prepare students for the modern -- much less the future -- workplace.

The latter observation was recently reflected in the pages of this newspaper, when a Stanford economist blamed university mathematicians for not preparing new Ph.D.'s to work in our high-tech economy. We urge the LAUSD Board to listen to your teachers, not university mathematicians, and to grant to your students the opportunity to participate in our exciting and data-driven economy.