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Math professors seek change in state's K-12 math curriculum

By ELISE CATCHINGS

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COLUMBIA — Members of prominent university mathematics departments in Missouri are calling for an evaluation of state standards and expectations in K-12 math curriculum.

More than 50 professors at three Missouri universities signed a letter urging the state to match its K-12 math education standards with those set out in a national report for the coming decade. In the letter, the authors state that many college students, for example about 1,000 at MU each year, must take remedial math “because they are not prepared for College Algebra.”

Dated May 5, the letter was sent to the Missouri Department of Elementary and Secondary Education. It was signed by 39 faculty members from MU, six from Washington University in St. Louis and seven from Missouri University of Science and Technology, formerly the University of Missouri-Rolla.

“I signed the letter because I felt a professional obligation to do so,” said MU math professor Adam Helfer. “K-12 math education in the state really is a critical issue. We have already gone too far down the wrong road, and it is important to get on track as quickly as possible.”

Other signers include former University of Missouri System President Mel George, MU Arts and Science Dean Michael O’Brien, math department Chairman Mark Ashbaugh and Chairman-designate Glen Himmelberg.

George and Jan Segert, an associate professor and director of graduate studies in math, jointly wrote the four-page letter that outlines how the current Missouri K-12 math curriculum lags well behind standards set by the National Mathematics Advisory Panel. Jan Segert is the husband of new Columbia School Board member Ines Segert, who has been critical of the district’s math curriculum and made that a central issue during her bid for election this spring.

On March 13, the national panel, appointed by President Bush, released a final report, [“Foundations for Success.”](#) intended as a blueprint for math education.

“Foundations for Success” is referenced several times in the letter, showing how the current standards of math in K-12 Missouri schools do not take into account the mathematics curriculum that is proposed on the national level.

“I’m not sure our petition makes it entirely clear, but what we are saying is that the standards we have in Missouri are not even in line with national standards,” said signer and MU math professor Alex Iosevich.

“And the national standards themselves are already pretty low.”

The letter states: “These excerpts from the NMAP report contrast sharply with the ‘student centered’ focus dominating the Missouri K-12 document, which repeatedly prescribes that students ‘explore,’ ‘investigate,’ ‘develop models’ and ‘conduct experiments.’”

Also cited in the letter is “Missouri K-12 Mathematics: Core Concepts, Learning Goals and Performance Indicators,” a draft of which is now in circulation for public comment. Due out in final form this fall, it was written by a group of Missouri educators and it highlights key math concepts students should learn in grades K-12. This document can be found on the Department of Elementary and Secondary Education Web site, dese.mo.gov.

The math professors question whether those who write the state curriculum are fully qualified to do so.

“I’m not pushing an elitist point of view here,” Iosevich said. “I’m not suggesting that they populate this board with Ph.D. mathematicians. But they should at least populate this board with people who have a solid background in mathematics.”

In addition, the letter states: “The proposed Missouri K-12 document is based narrowly and almost exclusively on the (National Council of Teachers of Mathematics) standards that were the motivation of much of the mathematics curriculum work of the LAST decade rather than the work of the (National Mathematics Advisory Panel) for the NEXT decade.”

The letter refers not only to the Missouri math standards in comparison with the NMAP standards but also to the “Revised Draft of the Postsecondary Entry-Level Competencies,” which outlines the math still expected of students going into higher education.

“Those competencies were never intended, as we understand it, to be other than minimal competencies sufficient only to prepare students for success in college algebra, not calculus,” the letter states. The math professors want these standards upgraded.

The 2005 “State of State Math Standards Report Card,” which gave Missouri’s math curriculum an “F,” is also cited in the letter. “Overall, the Missouri grade-level expectations lag behind those of the better state standards by a year or more,” the letter states, citing the Missouri report card from the Thomas B. Fordham Institute, which prepared the report card.

The low assessment troubles the professors, who say they see it reflected in their college classrooms.

“One of the most painful things for me as a math professor at Mizzou is to work with students who have native ability in math but are not going to be able to capitalize on it because their K-12 preparation is inadequate,” said MU math professor Adam Helfer. “There is just nothing that can be done at the college level to make up for this — it’s far too late.”

MU math professor Alex Koldobsky’s concern is so great that he tutors his young daughter, a Columbia Public Schools first-grader, in math at home.

“We have to teach her mathematics at home using Russian textbooks,” Koldobsky said. “Because otherwise she will not be competitive with students from other states and countries.”

As a professor, this concerns him on another level.

“I have been teaching Calculus 1 for the last few years, and I clearly see the deterioration of computational and algebraic skills of incoming freshmen,” Koldobsky said. “Instead of working on the concepts of calculus, the majority of the students have to think for a long time about every elementary arithmetic and algebraic step, which at this point have to be automatic for them.”

The letter expressed the hope that state education commissioners D. Kent King and Robert Stein will “institute an immediate review of both the K-12 draft and the college entry-level document to determine their adequacy in the light of the (National Mathematics Advisory Panel).”

The letter has been received by the Department of Elementary and Secondary Education. Assistant Commissioner Stan Johnson. He said his understanding is that some comments have been written down, but as of yet no formal response has been made.

“I hope the current math educational madness will stop soon,” Koldobsky said. “Again, we are losing the whole generation for mathematics and related science and technology, this is a huge problem.”