

Algebra is not the problem

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By Phyllis Hunsinger

Algebra has been under attack in recent weeks, perhaps brought to the fore by a political scientist named Andrew Hacker, who wrote "The Math Myth and Other STEM Delusions."

Wondering why we should take seriously the mathematical views of a political science major might be fodder for discussion; however, let's discuss his premise. Mr. Hacker blames algebra for a 20-percent dropout rate from high school.

Algebra is a study of numerical relationships, a comparison between the known and unknown, putting real-life problems into equations, and then solving them. Algebra is incredibly useful in the real world. It is a way of thinking logically to develop patterns or procedures that can be applied to general problems. To calculate using a computer spreadsheet, algebraic thinking is necessary. Qualitative reasoning (algebra) is different from quantitative reasoning (arithmetic). Philip Uri Treisman, a professor of mathematics at the University of Texas, said, "Algebra is the tool for consolidating your knowledge of arithmetic."

And that statement directs us to the systemic problem: math education in the United States. Far too many students arrive in their first algebra class without a strong foundation in basic arithmetic. They are unable to add, subtract, multiply, or

divide with any degree of accuracy or speed. They do not understand the relationship between fractions, decimals, and percent. Simple formulas and story problems cause many students grief. Students appear to lack an understanding of numbers, their magnitude, relationships, and how they are affected by operations; in other words, they have no number sense.

Years ago students were required to master the basic facts of addition, subtraction, multiplication, and division at an early age so they could be used as tools to understand more complex problems. When the education gurus decided memorizing math facts was an unacceptable method for teaching mathematics, students became handicapped. Students now are concentrating on solving the basic operations, those facts that used to be automatic because they were memorized, to such a degree that they cannot think their way to solving the actual problems. Whenever a student must reach for a calculator for simple quantitative solutions, this creates a huge stumbling block to qualitative reasoning. Thus students begin to be unsuccessful at the next level, which is algebra.

Examining test data reveals a continual decline in math proficiency. If public educators were honest, they would admit the new techniques and practices have done nothing to improve math performance. Colleges and universities now fund a Department of Developmental Studies, a euphemism for the department of remediation. This is necessary because

more than 40 percent of the students graduating from high school do not have the necessary math skills to enroll in a first-year college algebra course, a requirement for any degree plan in college. The students must pay for these remedial courses; however, they receive no college credit.

The United States was able to send men to the moon using math education techniques from 50 years ago. And there were no political science professors proclaiming that algebra was simply too hard and irrelevant. College algebra courses today still require the same math understanding as they did 50 years ago. The only difference is that many students are not receiving the same quality math instruction in school today. There are problems in math education, but algebra is not one of them.

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