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Title

To Accelerate, or Not

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The Common Core State Standards in mathematics (CCSSM) are the first step in an ambitious undertaking to create a system where all students meet the same, challenging expectations. But their adoption by states have left some, most recently in North Carolina, wondering how accelerated students will be affected.

Their concern -- detailed in Gregory Kristof's June 1, 2012 piece for the Huffington Post "Common Core Math in North Carolina Would Keep Elementary Students From Taking Middle School Courses" -- is that these students will be impacted negatively by having to study material that is no longer challenging or considered beyond grade level. As a result, a misguided hypothesis has emerged: the best way to educate our brightest students in mathematics is to let them accelerate through the grades. But, many of us in institutions of higher learning across the country do not agree.

We believe that the quality of the mathematics education is far more important. We feel strongly that students learning the basic topics in K-12 mathematics thoroughly and well is more important than how fast they can learn.

There are good reasons to believe that we are shortchanging all students, including those deemed the most advanced in

mathematics. At present, the school math curriculum generally divides into two kinds of learning: it either emphasizes purely procedural knowledge with little reasoning for why it works, or emphasizes vague, conceptual knowledge at the expense of skills and precision. Neither leads to the kind of mathematics learning that will get our nation out of its present educational doldrums.

To improve, we must begin with a better set of math standards -- one that is mathematically correct and coherent. Overall, CCSSM meet these criteria in surpassing fashion. The CCSSM will undoubtedly be more challenging to all students because, for perhaps the first time, students will be asked to master both procedural and conceptual knowledge and learn each topic in a logical progression.

Learning the mathematics prescribed by CCSSM requires that all students, including those most accomplished in mathematics, rise to the challenge by spending the time to learn each topic with diligence and dedication. Skimming over existing materials in order to rush ahead to more advanced topics will no longer be considered good practice.

Mathematics is by nature hierarchical. Every step is a preparation for the next one. Learning it properly requires thorough grounding at each step, and skimming over any topics will only weaken one's ability to tackle more complex material down the road. The weakness usually shows up in students' scientific work in college. This is one reason why many of my colleagues bemoan the practice of acceleration in schools.

Parents of students in accelerated elementary school math need not worry. There will still be an abundance of new concepts to learn and apply. For example, the fifth-grade CCSSM are vastly different from North Carolina's previous fifth-grade math standards. If next year's math curriculum is consistent with the CCSSM, then students in North Carolina will learn the following topics that are not in the previous fifth-grade standards: the correct way to add, subtract, and multiply fractions; the correct

way to divide whole numbers by a unit fraction and a fraction by a nonzero whole number; the reason why the area of a rectangle is the product of (the lengths of) the sides when the side lengths are fractions; a correct way to think of volume; and a correct conception of a coordinate system.

These constitute a very substantial portion of the elementary math curriculum.

I said earlier that, to improve student achievement in mathematics, we have to begin with a better set of math standards. Adopting the CCSSM is merely a beginning. Because the expectations of the CCSSM are substantial and rigorous, our effort should be focused on effective implementation of the CCSSM in a way that does them justice. We should not allow a sideshow about acceleration to overshadow our nation's drive to achieve excellence in mathematics education.