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"They need to be solid in standard skills first": how standards can become the upper bound.

Hegedus, Stephen J. (ed.) et al., The SimCalc vision and contributions. Democratizing access to important mathematics. Dordrecht: Springer (ISBN 978-94-007-5695-3/hbk; 978-94-007-5696-0/ebook). Advances in Mathematics Education, 299-316 (2013).

Summary: Scaling Up SimCalc researchers and curriculum developers intended SimCalc to satisfy Texas teaching goals for seventh grade mathematics and beyond. The study findings showed that students with SimCalc gained significantly more than their peers on the elements that went beyond the standard curriculum. However, student scores also showed that students with SimCalc gained just as much as (or more than) their peers in the curricular areas tested on the yearly statewide high-stakes assessment exam. There was no detectible loss due to the SimCalc intervention. However, teacher post-unit phone interviews reveal that teachers were uncomfortable. Teachers described the SimCalc unit as being more conceptually difficult than their usual curriculum. Despite the fact that students were not suffering in any detectible way, several teachers commented that their students needed to be "solid in all their standard skills" before tackling the conceptually more difficult content of the SimCalc unit. Two obvious explanations for this are that there were hidden pedagogical costs to using SimCalc, and that SimCalc-related learning was insufficiently visible to the teachers. However, more illuminating are the indications that these teachers had adopted the standards as an upper bound on what they could and ought to teach. We investigate the intersection of teacher discussion of mathematics, certain US state standards, and teachers' perceptions of the SimCalc project.

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