

A stack of three books is shown on the left side of the image. The top book is white with a yellow cover, the middle one is white with a red cover, and the bottom one is white with a blue cover. A red apple is placed on top of the white book with the yellow cover. A yellow pencil with a pink eraser is also resting on the white book with the yellow cover. The background is a solid teal color.

A Technology-facilitated Scale up of a Proven Model of Mathematics Instruction in High Need Schools

“It was a very strong proposal. ... we feel confident that this is more than a prudent risk.”

Jim Shelton, Assistant Deputy Secretary for Innovation and Improvement



Old Dominion University expected to receive the largest award in the federal Investing in Innovations competition

- Approximately \$25 million
- The only winner of a “scale up” award
- #1 application for funding from 587 nationally
- Must obtain commitments for at least \$1.25 million in private funds to support the project
- Private match may come from multiple sources
- Commitments must be received by no later than December 9, 2011
- Funds may be conveyed any time between January 2012 and December 2015



Who are the official partners?

- **Lead applicant**
 - Dr. John Nunnery, Project Director
 - ODU Faculty from The Center for Educational Partnerships, Educational Foundations and Leadership, and STEM Education and Professional Studies
- **Official partners**
 - The Success for All Foundation
 - Johns Hopkins University's Center for Technology in Education
 - MDRC (Evaluator)
 - Norfolk Public Schools (VA)
 - Portsmouth Public Schools (VA)
 - Halifax County Public Schools (VA)
 - Judson Independent School District (San Antonio, TX)
 - Unified School District 428 (Great Bend, Kansas)



What will the project do?

- Scale up a proven model of mathematics instruction called Student Teams Achievement Divisions (STAD Math) to 185 middle schools in Virginia and across the United States
- Improve mathematics achievement of 135,000 middle school students during the 5 year project period
- Ensure that students enter high school better prepared to benefit from rigorous math and science courses
- Dramatically increase the efficiency with which effective educational reforms can be disseminated



Why is this important?

- Students in the United States have similar math achievement to our international competitors in elementary school
- During the middle school years, the math performance of U.S. students deteriorates dramatically
- Nearly 2/3 of the leakage from the STEM education and career pipeline occurs during the middle school years
- Girls, students of minority ethnic and language backgrounds, and students with disabilities make up the vast majority of the future workforce of the United States
- These same students are grossly under-represented in STEM career pathways



Will it work?

- The proposed project had to meet the most stringent criteria for proof of effectiveness- multiple experimental studies, mostly conducted by third parties, in diverse contexts
- An ODU meta-analysis of 14 randomized studies of STAD-Math effects indicated a statistically significant average effect size of +0.34 in secondary school settings, with a 95% confidence interval of $d_L = +0.22$ to $d_U = +0.46$.
- In plain English, this means that we can be 95% sure that students taught using STAD-Math will experience about 34% more annual growth in mathematics achievement than randomized control students receiving instructional “business as usual”
- According to Nicholas Lemann, graduate Dean at Columbia University, our partner the Success for All Foundation has “the best sustained record of producing better-educated children in difficult circumstances, in hundreds of schools over many years,” (The New Yorker, 9/27/2010).

What is it?



- STAD-Math provides a unique curricular framework that is customized to fit local and state standards and assessments
- It is built around a research-proven cycle of effective instruction that engages students and extends their mathematical understanding, with four key elements:
 - Active instruction, in which the teacher presents a compelling concept demonstration
 - Structured team practice using cooperative learning structures and team cooperation goals
 - Ongoing assessment that allows teachers to frequently check for understanding and assess student progress
 - Positive team and individual feedback which increases team interdependence and motivation



Are there other benefits besides improved math achievement?

- STAD-Math cultivates the collaboration and communications skills needed to be successful in fast-paced, highly collaborative STEM disciplines
- STAD-Math is proven to enhance higher-order cognitive skills
- STAD-Math is proven to enhance attitudes toward learning math
- STAD-Math is proven to promote peer acceptance, improved self-concept, and math achievement for students with disabilities
- STAD-math is effective with **ALL** students regardless of background, but it is especially effective at improving math achievement and attitudes for girls, impoverished students, minority students, and students with disabilities



What are the expected local, state and national outcomes?

- Improved math achievement outcomes for 135,000 students in 185 high need middle schools across the U.S.
- Increased number of students entering STEM career pathways
- Increased access for students from traditionally under-represented groups to rigorous, advanced STEM coursework
- Increased collaborative professional learning opportunities for mathematics teachers in rural and urban centers across the nation
- Increased capacity to scale up effective educational programs that will provide a platform for future growth and opportunity



For more information on how you
can contribute to this project, please
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