

EDUCATION DAILY

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STEM EDUCATION

COMPETES includes STEM teacher training program

New law authorizes \$46 billion for other STEM initiatives

By Emily Ann Brown

Earlier this month, President Obama signed into law the America COMPETES Reauthorization Act, P.L. 111-358, a law that authorizes \$46 billion over three years for basic research and initiatives aimed at improving science, technology, engineering and mathematics education nationwide.

The law also includes a new program that appears to replicate the National Math and Science Initiative's UTeach, a model for training math and science teachers that has spread to 23 universities since its inception three years ago.

The renewal of COMPETES is timely, as recent data have ranked U.S. students near the middle of 65 countries in science and math achievement.

"The America COMPETES reauthorization paves the way for the vital funding of research, STEM education and American innovation, and will help keep America competitive through a time of great economic uncertainty," said Deborah Wince-Smith, president and CEO of the Council on Competitiveness, in a statement.

The final version of the bill passed the Senate by unanimous consent on Dec. 17 and the House by a 228-130 vote on Dec. 21.

However, it did not earn the support of some legislators, including Rep. Ralph Hall, R-Texas, the newly elected chairman of the House Science, Space and Technology Committee.

Hall opposed the bill, raising concerns over new programs that he felt were "unnecessary and potentially duplicative." He also questioned whether policymakers had brought the bill up for consideration too soon.

What's more, while supporters of the bill touted a Senate amendment as a more "fiscally conservative compromise," its opponents

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Today's Highlights

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SCHOOL IMPROVEMENT

Report: Lowest-performing schools often fail to improve

By Adam Dolge

A recent report from the Thomas B. Fordham Institute and Basis Policy Research finds that only 1 percent of the lowest-performing K-8 schools improved over a five-year period.

The study, *Are Bad Schools Immortal?*, examined more than 2,000 low-performing schools (1,768 district-operated and 257 charters) in 10 states from SY 2003-04 to SY 2008-09. The purpose of the study, released last month, was to determine how many schools improved beyond the 50th percentile within the five-year period. The study also examined school closures.

"Turnarounds are not easy; we show that with data" said David Stuit, author of the study and an analyst with Basis. "Going through the motions and just doing what is expected based on federal guidelines is not going to get the job done. It will work for 1 percent of the schools."

Bleak outlook

The report offers a bleak outlook on school improvement initiatives, as only 1.4 percent of the district schools and less than 1 percent of the charter schools met the study's definition of "turn-around." The study defined a turnaround school as a school in its state's lowest decile (proficiency at or below the 10th percentile) at the beginning of the review period that had to surpass the 50th percentile within five years. The study classified schools with a "moderate improvement" label if they improved

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Researcher: Inattention poses threat to SIG outcomes

By Tricia Offutt

Implementation research shows that schools have a 95 percent chance of failure when they fixate on one-shot training for the latest, greatest innovation with little attention to on-the-spot practice during training and targeted, follow-up coaching. The intentions are great, but the ultimate execution falls flat.

The federal School Improvement Grants program is likely to fall into the same trap because it's not investing in sustainable implementation capacity, said Dean Fixsen, codirector of the National Implementation Research Network. Often under such reform efforts, Title I schools feel pressured to quickly hire more staff and pile on new evidence-based interventions.

"According to the data on implementation, those are pretty much the wrong things to do," Fixsen explained. "It's our tendency to add more things in hopes that we'll find the right combination that will lead to a better outcome."

Wanted: Implementation specialists

Positive change is more likely in a turn-around school when you simplify the number of initiatives you take on and do a bang-up job implementing them, he said.

A school reform grant program that emphasizes innovation without adequate implementation support is like attempting to drive a car without any gasoline in it, Fixsen added.

"The federal government talks about innovation all the time and scaling up," he said. "They talk zero about how those things are going to be done, and who will do the work. It's all about the what — not the how or the who."

SIG is short-term money funding short-term projects, but just a small portion devoted to purposeful implementation could create a positive impact for decades to come, he said. "The opportunity is here, and it's not being taken advantage of."

When computers became more commonplace, it became apparent that companies needed information technology specialists, he said. Like-

wise, schools and districts need implementation specialists.

The need is apparent given 40 years of basically flat-line National Assessment of Educational Progress scores despite year after year of next-best-thing innovations, Fixsen said. The education field continues to reinvent a misshapen wheel, and the problem is not a lack of well-meaning, competent educators or best practices, he said. Rather, it's that too few educators and policymakers know the basics of effective implementation.

Research reveals key components

In recent years, those who research implementation have defined concrete, replicable core components for effective implementation that are the same — regardless of the program implemented or the field it's being implemented in. The components are:

- Staff selection.
- Pre-service training.
- Consultation and coaching.
- Staff evaluation.
- Program evaluation.
- Facilitative administrative supports.
- Systems interventions.

When all the implementation pieces come together, evidence-based school reform can lead not only to dramatic improvement, but also to equally important, sustained gains. Yet far too often, districts are missing certain elements, and grant programs like SIG underestimate or potentially ignore the challenges of actual implementation, he said. That means far too few innovations have the impact expected, and even fewer stick around for long.

Fixsen said he's not interested in a blame game. He'd like to get the word out to as many educators and policymakers as possible about how to use the science of implementation to students' advantage.

Implementation "is the huge missing link in education and all of human services," he said. "We are as a human race just finding this stuff out. These are global issues."



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Bill urges coordination of STEM education efforts

The America COMPETES Reauthorization Act includes a provision to increase coordination among federal agencies as they work to advance teaching and learning in the science, technology, engineering and math fields.

Indeed, America COMPETES authorizes funding for key measures, including several aimed at bolstering STEM education in the U.S.

Education Secretary Arne Duncan, in a recent interview with *Education Daily*®, admitted there are “many more STEM resources outside of our department than inside.” On this front, he said, the department has been working closely with the National Science Foundation, the National Institutes of Health, and the Energy Department to leverage agency resources.

“There are things happening now that have never happened before,” Duncan said.

While President Obama and Duncan have done well in championing STEM education policy, one insider insisted a lack of coordinated efforts across

public entities and with private sector partners, may hinder long-term progress.

“There are still impediments to utilizing public-private partnerships; there are still impediments to using nonprofits as fiscal agents to implement and manage these programs,” said Tom Luce, CEO of the National Math and Science Initiative and former assistant secretary with the Education Department.

“From a policy perspective, the White House has really articulated the right vision, but what needs to happen is it needs to be driven across the government all the way down to individual divisions in a department,” Luce told *Education Daily*®. “And that’s a struggle, and we need to improve in that area.”

Luce called for sustained effort on the part of decision-makers.

“It’s hard sloggling, and it requires constant care and attention from the White House and Secretary Duncan” to eliminate the barriers to U.S. economic competitiveness and the substantial teacher shortage that exists in STEM subjects today, Luce said.

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lamented new spending that added up to \$7.4 billion.

Meanwhile, the law keeps funding authorization levels for research at the National Science Foundation, the National Institute of Standards and Technology, and the Department of Energy’s Office of Science on a path to double.

It also makes critical investments in existing programs aimed at strengthening STEM education, such as the Robert Noyce Teacher Scholarship program, among others.

STEM teacher shortage

The concept for NMSI emerged in 2007 from the *Rising Above the Gathering Storm* report, which called for improvements in U.S. STEM fields and education, and also served as the basis for the America COMPETES Act.

In a recent interview with *Education Daily*®, Education Secretary Arne Duncan said a fundamental problem with STEM education in the U.S. “is that we don’t have enough teachers who know math and science. And it’s hard to instill in children a love of science that you yourself don’t know well or struggle with.”

Duncan, who has advocated pay raises for math and science teachers, also praised the UTeach program for promoting pedagogy and deeper content skills among preservice educators.

“We’ve had this shortage of math and science teachers for two decades, and we just keep ad-

miring the problem — we just keep talking about it,” he said. “I want to fix it.”

Data released last fall showed that enrollment in the UTeach program has tripled in the last three years.

“But we are not finished yet,” said NMSI CEO Tom Luce. “We have established without a doubt that our replication process works, but we need to expand these highly effective programs even further if the U.S. is to remain competitive in the global marketplace.”

Under COMPETES, Congress is authorized to spend \$10 million a year for three years on UTeach. If NMSI can encourage the private sector to provide a \$30 million match, it is likely that NMSI could add 30 universities to its roster in the next three years, Luce explained to *Education Daily*®.

Teaching vacancies in math and science are often among the hardest to fill, particularly among high-need schools. But the quality of math and science teachers is touted as the most important factor influencing whether students will do well in STEM subjects.

“We are working now to raise funding from state governments and private supporters to spread the program further, and we’re going to be encouraging Congress to appropriate the funds that are called for by the America COMPETES program,” Luce said.

“If Congress does that, then we can expand this across the country right away,” he added. “The goal of producing 2,000 teachers a year is achievable.”

Charter schools' design provides path to closure

A failing charter school was more likely to close than a failing district school, according to a recent study from the Thomas B. Fordham Institute and Basis Policy Research.

Are Bad Schools Immortal? examined whether more than 2,000 failing schools in 10 states were able to turn around, moderately improved, closed, or remained persistently low-achieving between SY 2003-04 and SY 2008-09.

David Stuit, author of the report and an analyst with Basis, explained that, by default, a charter school is designed to close if it does not improve. The study found 19 percent of low-performing charter schools closed, compared with 11 percent of district schools.

The idea that charter schools are eligible for School Improvement Grants "seems disingenuous," as they should be shut down or operated by another group, Stuit said.

Charter schools are designed with the notion of autonomy, Stuit explained. A rigorous review should indicate whether a charter remains open, but according to the study, most schools stayed open without improving.

"It's taking the opportunity away from someone else to operate the school," Stuit said. Stricter accountability would allow a different operator to take over and attempt to build a better school in addition to signaling to other charter schools that a lack of improvement will not be tolerated.

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from the first quartile to the second quartile.

Data were gathered from grade-level reading and math proficiency rates from state education department websites and demographic, geographic, and programmatic data from the National Center for Education Statistics' Common Core of Data. The study looked at schools in Arizona, California, Florida, Michigan, Minnesota, North Carolina, Ohio, Pennsylvania, Texas, and Wisconsin. These states were selected for the study because they had a large sample of charter schools with publicly accessible test-score data dating back to SY 2003-04.

The data showed that district schools saw very slight improvement in the five-year period:

- 80 percent remained persistently low-performing.
- 8 percent were labeled as showing moderate improvement.
- 11 percent closed.

Charter schools, according to the report, made minimal strides:

- 72 percent remained persistently low-performing.
- 9 percent were labeled as showing moderate improvement.
- 19 percent closed.

SIG's impact

The reform models under NCLB were less strict than the four current intervention models associated with School Improvement Grants — transformation, turnaround, restart, and closure. Looking at past school improvement efforts, Stuit said many schools took "the path of least resistance" when it came to reform. "But, I still think we see that now," he said about SIG reform initiatives. "Very few opted to close down and very few of them opted to restart and open as a charter."

According to statistics from the U.S. Education

Department, about 71 percent of schools that received SIG monies in the first round of funding opted for the transformation model, which is frequently described as the least restrictive of the models.

"A lot of time when you get so prescriptive, it can just be treated as compliance at the district level, where it's just a matter of replacing the principal," Stuit said about reform models. Many districts end up swapping principals within the district, so it's hard to judge the effectiveness of the current SIG program.

"It needs to be an intentional effort where people take it seriously," he said.

Bryan Hassel, co-director of Public Impact, said more drastic reform is required to truly impact failing schools.

"The Fordham report makes clear that the strategies we've been using to fix failing schools have been an abysmal failure," he said. "Continuing these incremental reforms won't cut it."

"It's hard to make blanket statements about what's best for any individual school, but what we found is turnaround is rare in both sectors," Stuit told *Education Daily®*. "There was evidence that most of the turnaround schools took some major steps to reform, so it is possible — it's just extremely rare."

Despite the challenge in turning around the lowest-performing schools, Stuit said efforts can be hampered if schools, LEAs, and SEAs do not try a new approach. "I recognize it's an incredibly challenging task that requires a lot of focused effort," Stuit said.

Hassel agrees that reform is possible. "The Fordham report doesn't prove that we can't fix failing schools — just that we won't fix them with the failed strategies of the past," he said.

Public Impact released a report in August 2009, *Try, Try Again*, which explains that, "Though most turnaround efforts will probably fall short, we can achieve a high success rate over time by rapidly retrying change rather than letting failed efforts linger."