



## CASE STUDY RHODE ISLAND

## DISTRICT SPOTLIGHT ON COVENTRY PUBLIC SCHOOLS

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## Rhode Island Districts Using STEMscopes NGSS Show Higher Proficiency Rates on NECAP Science Assessment in Fourth Grade

### Summary

During the 2016-2017 school year, five public school districts in Rhode Island used the [STEMscopes NGSS](#) digital science curriculum in their elementary schools. The 2017 results from the New England Common Assessment Program (NECAP) Science Assessment show that these districts outperformed the rest of the state on their fourth grade proficiency rates in science. Specifically, the five STEMscopes districts had an average science proficiency rate of **54.1 percent**, and the state of Rhode Island had an average science proficiency rate of **40.6 percent**.

## Coventry Public Schools Raises Proficiency Rates More than 8 Percentage Points in One Year

### Challenges

Since Rhode Island became the first state to adopt the Next Generation Science Standards (NGSS) in 2013, public school districts across the state have been working toward full implementation by aligning their curriculum and instruction to the three-dimensional model of science teaching and learning reflected in the NGSS. One such district is [Coventry Public Schools](#) in Coventry, R.I.

“Our previous curriculum was aligned to the Rhode Island Grade Span Expectations (GSEs) in Science,” said Don E. Cowart II, director of curriculum, instruction and assessment for Coventry Public Schools. “We wanted to prepare our teachers and students for what would be expected of them with the NGSS, but we knew that what we had wouldn’t fit the bill.”

**Solution: Implementation of the STEMscopes NGSS digital STEM curriculum**

In July 2015, Coventry Public Schools began using the STEMscopes NGSS digital science curriculum in kindergarten through eighth grade. Built from the ground up to meet today's state standards and the NGSS, STEMscopes provides digital resources, supplemental print materials, and hands-on exploration kits that build student engagement and excitement for learning science. It also includes embedded support such as professional development videos and how-to guides to help teachers continuously improve their teaching.

"STEMscopes NGSS helped us quickly get the ball rolling toward the NGSS because of all the scopes and resources available to teachers and students," said Cowart.

STEMscopes NGSS is built on three dimensions — crosscutting concepts, discipline-specific core ideas, and science and engineering practices — that are seamlessly woven together in each unit or "scope." It places problem-based learning, engineering challenges, scientific investigations, math and literacy connections, and culminating claim-evidence-reasoning assessments at teachers' fingertips so they can help students understand the NGSS as they were designed.

"STEMscopes gives kids the opportunity to experience all the different parts of STEM — science, technology, engineering, and mathematics," said Cowart. "It also provides many more opportunities for hands-on learning than our students used to have with science textbooks. This is particularly important for elementary school students, who don't have science labs like our high school students do."

### ***Preparing for state assessments***

In Rhode Island, the NECAP Science Assessment includes traditional multiple-choice questions and extended response questions, and it requires students to perform short experiments in small groups and then answer questions based on the data collected.

"In our district, science was traditionally taught from textbooks using direct instruction. Our students could answer multiple-choice questions, but they didn't have a deep knowledge of scientific process skills and methods. So, students historically did poorly on the portion of the NECAP Science Assessment that required them to perform experiments and answer questions based on the data collected," said Cowart. "STEMscopes is different in that it provides a variety of ways to teach and explore science. The more diverse the opportunities are for learning science, the better the chances of getting students exactly what they need, and the better they'll perform when faced with new challenges."

### ***Preparing for college and careers***

"Inquiry-based learning is also about preparing kids for college or career expectations that will require them to use their hands and minds to solve problems, whether they're in science fields or not," said Cowart. "To do so, kids need to develop skills that will help them persevere, work collaboratively, problem solve, organize, and present information. When kids use STEMscopes, they develop these skills. STEMscopes allows us to engage underserved groups and give them a strong foundation in science, which not only benefits them but society in general."

### ***Developing student expectations across grade levels***

STEMscopes can be used as a core or supplementary curriculum in traditional, blended, and 1:1 classrooms. Strong vertical alignment makes it easy for teachers to develop student expectations across grade levels with parallel lesson design.

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**“Because we’ve been using STEMscopes for a few years now, our students are better prepared in science at each subsequent grade level,” said Cowart. “Our middle school teachers say that students are arriving with a stronger foundation in science than they did a few years ago. They also have a better understanding of what’s expected of them, which is moving the learning process forward much quicker.”**

## Results

From 2016 to 2017, the NECAP Science Assessment proficiency rate for fourth graders in Coventry Public Schools rose from 55.5 to 64 percent — a gain of 8.5 percentage points. In contrast, the average fourth grade proficiency rate for the state of Rhode Island remained flat at 40.6 percent. For eighth graders, Coventry Public Schools’ proficiency rate climbed from 21.8 to 31.5 percent — a gain of 9.7 percentage points. The average eighth grade proficiency rate for the state rose by only 1.7 percentage points.

**“With STEMscopes, all of our elementary school students are accessing the same curriculum and being exposed to the same hands-on learning experiences. They’re entering middle school with a strong foundation in science and they’re better prepared, which is having an impact on our test scores,” said Cowart. “While we’re continually working to improve our proficiency rates, we’re happy with the growth we are seeing. In 2018, we’ll be moving to a new state test that’s better aligned to the NGSS, so we are looking forward to that.”**

### NECAP Science Assessment Total Percent Proficient

Grade 4	2016	2017	Difference
Coventry Public Schools	55.5	64	+8.5
State of Rhode Island	40.6	40.6	0
Grade 8	2016	2017	Difference
Coventry Public Schools	21.8	31.5	+9.7
State of Rhode Island	18.9	20.6	1.7