CASE STUDY
Alabama

DISTRICT SPOTLIGHT ON
Talladega City Schools

STEMscopes™ ALABAMA

Alabama Districts Using STEMscopes Outperform State on ACT Aspire Science Assessment in Grades 5 and 7

Summary

During the 2016-2017 school year, 16 Alabama districts used STEMscopes Alabama in their elementary schools, and 14 districts used STEMscopes in their middle schools. The 2017 ACT Aspire science results show that the STEMscopes districts outperformed the state average in the percentage of students defined as "Exceeding" grade-level mastery in science in fifth grade and seventh grade.

In addition, compared to 2015-2016, STEMscopes districts increased their Exceeding proficiency rates at a higher rate than the state average. Specifically, STEMscopes districts increased their Exceeding proficiency rate by 1.7 percent in elementary school and 1.0 percent in middle school, compared to state's respective increases of 0.9 percent and 0.5 percent.

High Poverty District Raises Fifth Grade Proficiency Rates More than 11 Percentage Points in One Year

Challenges

In 2015, the state of Alabama adopted a new framework for K-12 science education, the Alabama Course of Study: Science. This course of study includes science and engineering practices, crosscutting concepts, and disciplinary core ideas that students need to become college and career ready. To meet the new science standards, many Alabama districts are implementing STEMscopes Alabama, a STEM curriculum built from the 2015 Alabama Course of Study: Science. One such district is Talladega City Schools, which is located about 50 miles east of Birmingham.

In Talladega City Schools, 61 percent of students are African-American and 39 percent are Caucasian. Eighty-five percent of students are economically disadvantaged, and every school in the district is a Title I school.

"We had been using textbooks in our science instruction, but with the new state standards, we wanted to move more toward a STEM model of instruction with hands-on, inquiry-based learning," said Pattie Thomas, curriculum coordinator/federal programs for Talladega City Schools. "In comparison with the cost of textbooks, which can be so expensive, we found that STEMscopes was the better way to go for a district-wide science adoption. With a digital curriculum, it's also easier to ensure that our teachers and students will have access to current information in science."

Solution

Implementation of the STEMscopes Alabama digital STEM curriculum

Talladega City Schools began using STEMscopes Alabama as its core science curriculum in kindergarten through eighth grade in 2016. 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 is aligned to our state standards. It provides all of the resources our teachers need to teach science, and it's easy to use," said Thomas.

Providing inquiry-based learning for diverse learners

STEMscopes promotes student inquiry and a real-world understanding of science, engineering, technology, and mathematics through hands-on and digital experiences. Each STEMscopes unit or "scope" is developed around the 5E (Engage, Explore, Explain, Elaborate, and Evaluate) model of instruction, with additional phases for Intervention and Acceleration to meet the needs of diverse learners. As students dive into the investigations in each scope, they develop their own contexts and meanings for the scientific concepts they are learning, retain more knowledge, and develop deeper understandings of the world around them.

"What our students like best about STEMscopes is the hands-on learning," said Thomas. "They like being in control of their own discovery, and they say that science is now fun."

Developing student expectations across grade levels

STEMscopes is built on three dimensions — cross-cutting concepts, discipline-specific core ideas, and science and engineering practices — that are seamlessly woven together in each 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 Alabama standards as they were designed. Strong vertical alignment makes it easy for teachers to develop student expectations across grade levels with parallel lesson design.

"At the elementary level, we can't wait until the third grade to start teaching science. At the same time, our teachers in the early grades are teaching students to read and develop their early math skills, which is a great responsibility. STEMscopes makes it easy for them to integrate science into their instruction because it already has those cross-curricular connections built in," said Thomas. "By starting early, our students will now be better prepared to handle the rigors of science in middle school and high school."

Results

The ACT Aspire categorizes student scores into four levels: In Need of Support, Close, Ready, and Exceeding. Students scoring at either the Ready or Exceeding level are considered proficient.

In Talladega City Schools, the percentage of fifth grade students scoring at the Ready and Exceeding levels on the ACT Aspire in science increased by 11.8 percentage points from 2016 to 2017. In contrast, the increase at the state level was only 1.7 percentage points.

"At the elementary level, we focus a lot on math and reading, but the area where we saw the biggest gain was science," said Thomas. "From 2016 to 2017, we saw a big jump in our science scores. The only change we made in that time was the adoption of STEMscopes. The data speaks for itself."

ACT Aspire — Grade 5

Percentage of students at the Exceeding level

	2016	2017	Difference
Talladega City Schools	6.5	10.7	+4.2
State of Alabama	14.2	15.1	+0.9

Percentage of students at the Ready level

	2016	2017	Difference
Talladega City Schools	17.4	25.0	+7.6
State of Alabama	24.7	25.5	+0.8

"Another benefit of STEMscopes is that it not only reaches kids who are struggling or who are at grade level, it reaches higher level thinkers as well. Instead of teaching to the middle, it allows all students to explore and make their own discoveries at their own pace. So, while our students are getting the core lessons they need to meet the standards, they're also getting the support or enrichment they need to excel," said Thomas.