CASE STUDY
Horizon Elementary – Broward County Public Schools
Sunrise, Florida

Horizon Elementary Raises Passing Rate

SUMMARY
At Horizon Elementary, a Title I school in the Broward County Public School district, the passing rate on the Florida Grade 5 Statewide Science Assessment jumped from 27 percent in 2016 to 48 percent in 2017 and 51 percent in 2018. How did Horizon’s fifth grade teachers help the school nearly double its passing rate in just two years? In 2016-17, they transformed their classrooms into active learning spaces for science with the STEMscopes™ digital science curriculum and hands-on exploration kits.
Horizon Elementary Raises Passing Rate 24 Percentage Points on Florida’s Grade 5 Statewide Science Assessment

CHALLENGES

“Previously, we had low test scores every year on our county benchmark assessment and our state assessment in science. We were using a textbook as our main resource for teaching science, but it wasn’t really motivating, especially when compared with today’s technologies,” said fifth grade teacher Karen Silensky.

“Another challenge was that the textbook didn’t really have the ‘meat and potatoes’ to help our students understand key concepts,” said fifth grade teacher Robin Butcher.

“We wanted to find a way to engage students at a deeper level and get them excited about science again,” said Silensky.

SOLUTION

Implementation of the STEMscopes K-12 digital STEM curriculum

Horizon Elementary began using the STEMscopes Florida digital science curriculum in the fifth grade in fall 2016, including the Spanish version that is available for the program. STEMscopes Florida is 100 percent aligned to the Florida Next Generation Sunshine State Standards (NGSSS) for Science. It can be used as a core science curriculum or supplementary resource in traditional, blended, and 1:1 classroom environments.

“STEMscopes covers everything our textbook covers, but it presents the content in a way that’s much more motivating for students,” said Silensky. “Now when we say, ‘It’s time for science,’ not one student groans. Instead, they’re excited. That’s a big change.”

Providing inquiry-based learning for diverse learners

STEMscopes provides a digital curriculum, supplemental print materials, and hands-on exploration kits that build student engagement and excitement for learning.

“STEMscopes is a major motivator for our students. It helps them grasp concepts, build their critical thinking skills, and connect science to real-world situations,” said Butcher. “Students especially love the concept videos and ‘Science Rock’ music videos. The Water Cycle song is in the first scope we teach in the fall, and students are still singing it at the end of the year.”

Each STEMscopes unit is developed around the 5E (Engage, Explore, Explain, Elaborate, Evaluate) model of instruction, with additional phases for Intervention and Acceleration. 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.

“In our first year with STEMscopes, we focused primarily on the Engage and Explain stages of the 5E model, and we frequently used STEMscopes to introduce topics during whole group instruction. In our second year, we went further into the Explore, Evaluate, and Elaborate stages to extend students’ learning and help them become more independent learners,” said Butcher.
Preparing for standards-based assessments
According to Butcher and Silensky, STEMscopes plays an integral role in helping students learn and review key concepts as they prepare for the county benchmark assessment and the state assessment in science. In the middle of the 2016-17 school year, Horizon Elementary also purchased the STEMscopes hands-on exploration kits.

“We began using the kits as a review to help students prepare for our benchmark assessment,” said Butcher. “The more we do with the kits, the better it is for our students, and they love the hands-on activities.”

Teachers also use the STEMscopes curriculum to review key standards and fill in gaps as students prepare for the state assessment. “There are six ‘Fair Game’ benchmarks — four from third grade and two from fourth grade — that are tested on the Grade 5 Statewide Science Assessment. With STEMscopes, we can go back to standards that were covered in the third or fourth grade and quickly review them or run through the entire lesson if we need to,” said Butcher.

Helping English language learners
The STEMscopes digital curriculum and hands-on kits are also helpful for English language learners (ELLs). “We had one student who didn’t speak much English, so we put him on the Spanish version of STEMscopes. The videos and animations were really helpful. It was so much more beneficial than giving him a textbook. By the end of the year, he was speaking more English, and even though our state assessment is given in English, he did well. We definitely think STEMscopes played a role in his success,” said Butcher. “It’s also beneficial with students who speak a language other than Spanish because they can still see the pictures and videos, and experience the hands-on activities.”

Supporting teachers
In addition, STEMscopes includes embedded support for teachers, such as professional development videos and how-to guides, to help them continuously improve their teaching.

“STEMscopes gets teachers more motivated about teaching science,” said Butcher. “The great thing about STEMscopes is that it’s all scripted for you. It tells you step by step how to do each lesson, so there’s no guesswork. If you don’t understand a particular standard, it gives you the information you need to be prepared to start your lesson. Before, with textbooks, we had to do all that preparation and research on our own. Now, with STEMscopes, it’s all there for us. It makes us excited to teach science. If we’re excited to teach, then our students will be excited to learn science.”
RESULTS

From 2016 to 2017, the average passing rate for the state of Florida on the Grade 5 Statewide Science Assessment remained flat at 51 percent, and the passing rate for Broward County rose from 45 to 47 percent. In contrast, the passing rate for Horizon Elementary jumped from 27 to 48 percent — a gain of 21 percentage points in just one year. In 2018, Horizon’s passing rate increased further to 51 percent.

### Florida Statewide Science Assessment Grade 5 Passing Rates

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2-Year Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizon Elementary</td>
<td>27%</td>
<td>48%</td>
<td>51%</td>
<td>+24 percentage points</td>
</tr>
<tr>
<td>Broward County</td>
<td>45%</td>
<td>47%</td>
<td>51%</td>
<td>+6 percentage points</td>
</tr>
<tr>
<td>State of Florida</td>
<td>51%</td>
<td>51%</td>
<td>55%</td>
<td>+4 percentage points</td>
</tr>
</tbody>
</table>

A Title I school, Horizon serves predominantly minority and economically disadvantaged students, and a higher percentage of ELLs than the district and state averages.

### Student Demographics

<table>
<thead>
<tr>
<th></th>
<th>Horizon Elementary</th>
<th>Broward County</th>
<th>State of Florida</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>13%</td>
<td>21%</td>
<td>39%</td>
</tr>
<tr>
<td>African American</td>
<td>53%</td>
<td>39%</td>
<td>22%</td>
</tr>
<tr>
<td>Latino</td>
<td>26%</td>
<td>33%</td>
<td>32%</td>
</tr>
<tr>
<td>Other</td>
<td>8%</td>
<td>7%</td>
<td>7%</td>
</tr>
<tr>
<td>Economically Disadvantaged</td>
<td>79%</td>
<td>62%</td>
<td>58%</td>
</tr>
<tr>
<td>ELL</td>
<td>16%</td>
<td>13%</td>
<td>10%</td>
</tr>
</tbody>
</table>

“Our principal said that in 2017 we were one of only two elementary schools in the district — which has more than 250 elementary schools — that had double-digit gains,” said Butcher. “STEMscopes helped contribute to Horizon Elementary’s gains. Ever since we’ve been using STEMscopes, our scores have been going up.”

“In 2017, our math and reading scores went up too, but they were nowhere near our science gains. There were some students who didn’t do well in reading or math, but they did very well in science. I would say that at least 80 percent of our success on our state test is due to STEMscopes, and that’s pretty good,” said Silensky.

In 2018, Broward County Public Schools adopted STEMscopes district-wide in grades K-5 and 6-8. “We think our school’s success was a big part of that since we increased our scores so much,” said Butcher. “If other teachers aren’t using STEMscopes yet, they should.”

“STEMscopes is great,” said Silensky. “Until we began using STEMscopes, students didn’t understand that science is everywhere. In kindergarten through fourth grade, they thought science was a book. They didn’t see science as being connected to the real world, so they thought that when they left school they’d never use it again. Now they realize science is everyday life.”