CASE STUDY

LEAD NEELY'S BEND MIDDLE SCHOOL – LEAD PUBLIC SCHOOLS

Madison, Tennessee

LEAD NEELY'S BEND MIDDLE SCHOOL

GRADES 5-8

373 Students
47% Economically disadvantaged
31% English learners
<1% American Indian or Alaskan Native
<1% Asian
42% Black or African American
44% Hispanic
<1% Native Hawaiian or other Pacific Islander
14% White

LEAD PUBLIC SCHOOLS

GRADES 5-12

2,100 Students
60% Economically disadvantaged
35% English learners
3% Asian
24% Black or African American
56% Hispanic
2% Other / Two or more races
14% White

EXECUTIVE SUMMARY

Challenges

- Science curriculum that did not meet state standards
- Different lessons from classroom to classroom
- Lack of time and materials for planning hands-on labs

Implementation

- STEMscopes Science

Results

- Increase in inquiry-based, hands-on learning experiences for students
- Reduced teacher time planning science labs and activities
- Increased student engagement
- Higher passing rates on state science assessment

TENNESSEE MIDDLE SCHOOL RAISES SCIENCE SCORES 6+ POINTS IN ONE YEAR WITH STEMSCOPES

When Malorie Moose became the director of science for **LEAD Public Schools** in 2022, she quickly realized the existing science curriculum had significant gaps.

> "The program wasn't aligned with our state standards, so everyone was making up their own lessons based on their interpretation of the standards," said Moose.

The Nashville-based LEAD charter school network, which operates five schools in grades 5-12, also faced another challenge. A majority of students come to LEAD two to three years behind grade level. Without a comprehensive science curriculum, it was difficult for teachers to provide the support needed to help students catch up and meet grade-level expectations.

> "We wanted a curriculum that would align to the standards and get students doing science," said Moose.

After careful evaluation by leaders and a panel of teachers, LEAD adopted **STEMscopes Science Tennessee**, a phenomena-driven, hands-on STEM solution fully aligned to the Tennessee Academic Standards for Science.

LEAD implemented STEMscopes Science in all five schools during the 2023-24 school year. In its first year with STEMscopes, the percentage of students passing the Tennessee Comprehensive Assessment Program (TCAP) in science increased by an average of 3.46 percentage points in grades 5-8. At **LEAD Neely's Bend Middle School**, where teachers used STEMscopes with fidelity every day, the passing rate jumped by 6.6 percentage points.

> "STEMscopes Science helps us ensure we're teaching the right content and hitting the level of rigor needed to set our students up for success on our state assessment," said Kara Roberts, the instructional manager of science and social studies at Neely's Bend.

SUPPORTING STUDENT AND TEACHER SUCCESS

STEMscopes Science combines a comprehensive digital curriculum with supplemental print materials and ready-made exploration kits. It also includes embedded support for teachers — such as lesson plans, professional development videos, on-demand webinars, and how-to guides — to help them continuously improve their teaching.

> "Our teacher selection panel liked that STEMscopes has resources and supports for both students and teachers, and that the labs are already done for them," said Moose. "STEMscopes also has student writing activities, which aren't included with a lot of other science curricula."
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> "STEMscopes has a diversity of resources that teachers can pick and pull from, such as career connections and videos and PhET simulations," said Roberts. "So, teachers still have a lot of autonomy to make their science class the way they want it, but they also have the support they need to do it effectively."

INCREASING STUDENT UNDERSTANDING AND ENGAGEMENT

Each unit or "scope" in STEMscopes Science is developed around the research-based 5E (Engage, Explore, Explain, Elaborate,

Evaluate) model of instruction. It also includes additional phases for Intervention and Acceleration so teachers can adjust the pace and depth of instruction to meet the diverse needs of their students. In addition, the curriculum includes visual, auditory, and linguistic resources to support multilingual learners and help all learners understand academic language.

> "STEMscopes has changed the way we approach science. It encourages our students to think like scientists and investigate as a scientist would," said Moose.

For example, in a fifth grade lesson about solubility, students didn't simply listen to a lecture about what factors affect the rate at which sugar dissolves; they experimented. They stirred and crushed the sugar, and adjusted the water temperature to see the impacts for themselves.

> "This type of inquiry-based, hands-on learning is so important. It helps students gain a deeper, more intuitive understanding of science concepts," said Roberts. "Student engagement is much higher than in previous years because of the hands-on learning that's happening."

In fact, the hands-on labs are consistently cited by students as their favorite part of class. "When teachers asked students what they liked most about science last year, there was universal agreement — the Explore activities and labs were their favorite things," said Roberts.

SAVING TIME WITH HANDS-ON KITS

Teachers like that the STEMscopes exploration kits include ready-made materials for conducting the hands-on activities.

> "Before, many teachers — especially new teachers — were hesitant to do labs because they weren't sure what materials were needed or where to get them," said Moose. "Now teachers have so many options for different labs they can do."
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> "It's so great to have the materials teachers need," said Roberts. "It saves time and money, and teachers know the labs will work."

INCREASING COLLABORATION SYSTEM-WIDE

Additionally, STEMscopes makes it easier for teachers to develop student expectations within and across grade levels.

> "Our teachers are able to collaborate across campuses because they're all using the same curriculum," said Moose. "They also like that they can jump around in STEMscopes and see what was covered in prior grade levels or where students may have encountered a topic before so they know exactly where to go."

MAINTAINING CONSISTENCY IN CLASSROOMS

STEMscopes helps LEAD support consistency and coherence in science instruction in other ways as well.

> "There's a shortage of science teachers, so having STEMscopes has been really helpful," said Roberts. "If we have a long-term sub or if a teacher gets sick or has an emergency, I can just pull from STEMscopes and create lessons they can implement. From a school- and system-level perspective, it helps us maintain high expectations in our science classes, even if teachers have varying degrees of experience."

INCREASING PROFICIENCY ON THE STATE SCIENCE ASSESSMENT

From 2023 to 2024, LEAD saw significant improvement on TCAP Science scores. In 2023, 18.79% of students met or exceeded their grade-level expectations on the TCAP. In 2024, this number rose to 22.25%. This means that nearly 20% more students met or exceeded grade-level expectations in 2024 with STEMscopes Science.

LEAD PUBLIC SCHOOLS

TCAP Science – Percent Passing

	2023	2024	Difference
Grade 5	17.05	21.41	+4.36
Grade 6	12.1	19.82	+7.73
Grade 7	26.4	30.68	+4.275
Grade 8	19.62	17.1	-2.53
All Grades	18.79	22.25	+3.46

At Neely's Bend, where teachers used STEMscopes daily, the increase was even larger. From 2023 to 2024, the percentage of students who met or exceeded their grade-level expectations on the TCAP jumped from 13.6% to 20.2%.

LEAD NEELY'S BEND MIDDLE SCHOOL

TCAP Science – Percent Passing

	2023	2024	Difference
Grade 5	0	10	+10
Grade 6	9.3	19.4	+10.1
Grade 7	18.1	27.1	+9
Grade 8	14.7	15.6	+0.9
All Grades	13.6	20.2	+6.6

"STEMscopes definitely helped contribute to these gains because of the alignment to the Tennessee state standards and the level of rigor," said Roberts.

"We've also been able to support more of our school goals around literacy because of the student text in the STEMscopedia and the writing activities," said Moose.

CHANGING THE CONVERSATION IN SCIENCE

In addition to improving student learning, STEMscopes is helping teachers have deeper, more meaningful discussions about science instruction.

"STEMscopes has changed the conversation. It's no longer about creating science materials; it's about how to teach science more effectively," said Moose. "I'm also able to support the instructional managers at our schools differently than in previous years because I know what we should expect in our classrooms. I know we're putting content and activities in front of our students that hit the levels that the state assessment requires. With STEMscopes, it's more streamlined for all of us."