



**CASE STUDY**  
**WACO INDEPENDENT SCHOOL DISTRICT (ISD)**  
**WACO, TEXAS**

## **Waco ISD Prekindergarten Classes Increase STEM Instruction from 2 Minutes to 36 Minutes a Day with STEMscopes Early Explorer**

### **SUMMARY**

STEMscopes™ Early Explorer makes STEM education accessible and easy for preschool teachers so that time spent on STEM instruction increases significantly. In a 2014-15 implementation study in Waco ISD, teachers reported spending an average of 36 minutes per day on STEM instruction, compared to the national average of 1 to 3 minutes spent on math and science in preschool classrooms.

High-quality prekindergarten prepares children for kindergarten and beyond by teaching them important skills needed for academic and social success. In spring 2014, [Waco ISD](#) decided to bolster the science instruction in its [prekindergarten program](#), so it turned to [STEMscopes™ Early Explorer](#).

### **CHALLENGE**

“We began looking at STEMscopes because we felt that our state-adopted prekindergarten curriculum was lacking in science,” said Dr. Mary Konrad, early childhood education coordinator for Waco ISD. “One of the things we like about STEMscopes Early Explorer is that it’s a comprehensive science curriculum that encourages learning by doing. It’s also very flexible, which made it easy to integrate into what we were already doing in our classrooms.”

### **SOLUTION**

Waco ISD began using STEMscopes Early Explorer in fall 2014. STEMscopes Early Explorer is built from the ground up to meet Head Start, state, and national preK and kindergarten guidelines, and is scaffolded to prepare students for NGSS kindergarten standards.

Today Waco ISD provides STEMscopes Early Explorer district-wide in its free prekindergarten program. A child is eligible for enrollment in the program if he or she is at least four years of age by Sept. 1, and meets at least one of the following criteria:

- Unable to speak or comprehend the English language;
- Educationally disadvantaged;
- Homeless;

- The child of an active duty member of the U.S. armed forces;
- The child of a member of the U.S. armed forces who was injured or killed while serving on active duty;
- Is or ever has been in foster care.

### ***Standards-aligned, inquiry-based learning***

“STEMscopes Early Explorer is fully aligned to the Texas Prekindergarten Curriculum Guidelines, which makes it easy to implement alongside our state-adopted curriculum,” said Konrad.

Rachel Edson, a preK teacher at Mountain View Elementary, agrees. “Before, I didn’t have much science in my daily classroom activities. The science I did have was surface-level; we didn’t dig very deep,” she said. “Once we began using STEMscopes Early Explorer, I saw a huge increase in my students’ vocabulary and in their excitement for science. It gives students the opportunity to dig deep so they can better grasp the concepts we’re teaching and even come up with their own inquiries. It’s also comforting to know that it’s completely aligned to our state guidelines, which means I don’t have to spend my time making sure everything matches up.”

### ***Centers-based learning***

Waco ISD’s prekindergarten program uses a centers approach to learning. Complementing this approach, STEMscopes Early Explorer brings together 16 centers, Big Books, hands-on kits, sustained inquiry, and engaging activities to prepare students for elementary school. It integrates STEM content with literacy, creative arts, and physical and social development to promote academic and social skills across multiple domains of school readiness.

“STEMscopes fits right in with students’ “Work Time” in centers, our whole group instruction during “Circle Time,” and our small group instruction,” said Konrad. “Also, because it’s so well designed, it makes it really easy for new teachers to integrate science into their daily lessons.”

“We have seven centers in our classroom and we can easily incorporate STEMscopes Early Explorer into any center,” said Edson. “It’s inquiry-based and hands-on, which is everything that STEM should be. It takes science, mathematics, engineering, and technology, and strengthens kids’ knowledge and skills in each of those areas. It’s helped them grow so much. It’s amazing to see.”

### ***Teacher support***

STEMscopes Early Explorer also includes teacher background, materials lists, vocabulary cards, center set-up videos, parent introduction letters, and a “burning question” for each two- to three-week lesson.

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*“Science isn’t typically an area of strength for many early childhood teachers, so these materials are invaluable to them.” —Dr. Mary Konrad*

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“The teacher materials help a lot,” added Edson. “Students ask really good questions. If I didn’t have the background materials from STEMscopes, it would be much more challenging to develop that depth of knowledge.”

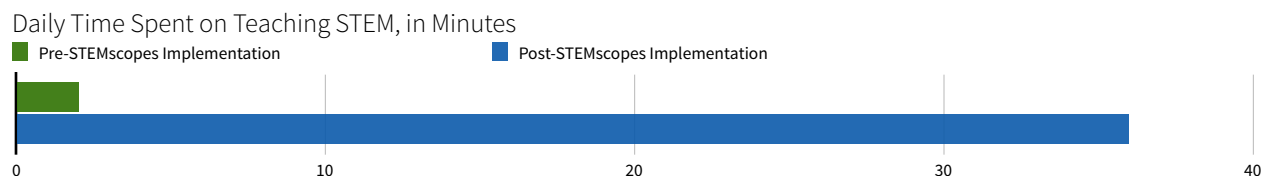
### ***Parent involvement***

The district also uses STEMscopes’ parent involvement letters, which are available in English and Spanish, to engage parents in their children’s STEM instruction. “We love the parent letters! We send them home at the beginning and end of each curriculum module. We receive great feedback from parents on the vocabulary their children are using at home from each module,” said Konrad.

“The letters give parents ideas of questions they can ask their children on the way home from school or at the dinner table,” said Edson. “Parents say that their kids are now talking about science more and even want to redo experiments at home.”

## RESULTS

In an implementation study conducted in Waco ISD during the 2014-15 school year, teachers indicated that STEMscopes Early Explorer complemented their existing curricula and resources, and allowed them to incorporate STEM throughout the entire room and the entire day. Many teachers stated that before Early Explorer, STEM was their weakest area and now it is a major focus in their classrooms.



### *More time spent on STEM instruction*

By the end of the 2014-15 school year, teachers reported spending an average of 36 minutes per day on STEM instruction, compared to 2 minutes a day without STEMscopes. The result was an additional 6,120 minutes of STEM learning that year.

“The year before I began using STEMscopes, there wasn’t much science time at all in my classroom. Now we have science every day,” said Edson. “Between STEMscopes and students’ science journals, we spend about 30 to 40 minutes a day on science.”

### *Increased interactional quality*

In the implementation study, classroom observations also revealed increases in interactional quality from fall to spring, including:

- An increase in student demonstration of content and student interactions and discussion around science content, usually through shared activity group work.
- More frequent opportunities for students to make choices relevant to their learning experiences and to take risks and try new and challenging things.
- More opportunities for students to engage in rich descriptions through observation, analyzing data, and reasoning about science content and phenomena.

### *Building a foundation for kindergarten and beyond*

“In Waco ISD, we have a very strong prekindergarten program and STEMscopes Early Explorer makes it even richer. Across the board, our kindergarten teachers say it’s obvious which children used STEMscopes Early Explorer in prekindergarten and which did not,” said Konrad. “STEMscopes gives our preK students a strong foundation in science — and because kids love the Early Explorer activities, they love the science.”

“Before I began using Early Explorer, my students didn’t like science very much. Now I’m excited about science and they are, too,” said Edson. “It’s one of our favorite parts of the day.”

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