

15-minute In-service Suite: STEAM

Kaitlin Brunick: Welcome to this presentation of the 15-Minute In-Service Suite on STEAM. STEAM stands for Science, Technology, Engineering, Arts, and Math. This suite describes how children from birth to age 5 naturally engage in STEAM skills, such as making observations, asking questions, exploring, problem-solving, and making sense of how the world works.

This suite also provides strategies to support children's STEAM skills and thinking. STEAM is part of what you do every day as you implement program goals and learning frameworks. The Framework for Effective Practice, or House Framework, helps us think about the elements needed to support children's preparation and readiness for school. The elements are the foundation, the pillars, and the roof. When connected to one another, they form a single structure that surrounds the family in the center. Because as we implement each component of the house, in partnership with parents and families, we foster children's learning and development.

STEAM is an essential part of the foundation. The foundation includes nurturing, responsive, and effective interactions and engaging environments. To encourage the development of STEAM skills, we need to provide engaging environments and materials, and support children's natural inclination to question, reason, and problem-solve. The first pillar, Curriculum and Teaching Practices, is also an integral part of the STEAM approach, as it sets the tone for curriculum planning. This presentation is one in a series of modules designed to help adults support young children as they learn positive behaviors; develop skills in STEAM, math, and writing; and engage in dramatic play. Let's take a closer look at each of the STEAM elements.

Science is the use of inquiry to make observations, ask questions, make predictions, and explore the environment to understand how the world works. Technology is more than just cellphones and computers. It refers to any type of man-made object or tool, such as pulleys and levers, a magnifying glass, or a measuring tape. Engineering is using materials to design, build, and problem-solve. It helps us understand how and why things work. The arts refers to activities that require creativity and imagination, such as drawing, painting, music, and pretend play. Math includes children's use of patterns and sorting; number and operations, like adding and subtracting; measurement; and geometry.

STEAM is for everyone, and children and adults use STEAM every day. The STEAM fields share a common approach, mindset, and language of inquiry. Children are naturally curious and eager explorers. They ask questions, problem-solve, discover objects, experiment, and create. In many ways, scientists and children have similar jobs. They're both trying to figure out how the world works. They share a STEAM mindset.

Teacher: Look at that. It's moving fast! It's moving fast.

Child: I want to see.

Kaitlin: Children are born ready to explore STEAM ideas, such as number, size, and shape. From their trinkets and toys to rocks and sticks, to stackable cups, young children are building STEAM knowledge as they play. An infant uses his mouth and hands to better understand an object's shape, size, or weight. A preschooler explores how pouring water can make a wheel spin. He's learning about science, technology, and engineering.

Children and adults naturally use the cycle of inquiry, or scientific method, to think through a problem. Observe, question, predict, experiment, and discuss make up the language of STEAM and our core STEAM skills. Children are building STEAM skills as they play and explore, but they need support from adults to encourage and expand their STEAM knowledge and thinking. Research shows that children's early STEAM experiences relate to success later in school. Let's look at some ways adults can support children's STEAM explorations.

Teachers and families can create an engaging physical environment that is stimulating and encourages experimentation. Engaging environments include diverse and open-ended materials that allow for creativity and investigation, and represent the children and families in the learning environment. Engaging environments also have interesting materials, encouraging children to explore and experiment, and allow children to be in charge of their own play. Home visitors can support families in creating safe and engaging learning spaces at home.

They help parents find everyday materials around the house to support STEAM thinking. When choosing materials, think of children's interests and developmental levels. Make sure the materials reflect children's cultures. Use the names of the materials in the children's home and tribal languages, as well as in English. Arrange materials so they are accessible to all children, including children with disabilities or suspected delays. Create an engaging social environment filled with nurturing, responsive, and effective interactions. Let children take the lead, but assist them with their questions as they make discoveries. Introduce basic inquiry skills, like observing, asking questions, and making guesses, to help children think about STEAM as they play. Model curiosity and a questioning mind. Speak STEAM. Incorporate problem-solving and STEAM-rich language in all types of activities.

Teacher: Hmm? What's different?

Kaitlin: Invite children to describe their observations, ask questions, or make predictions. Girl 1: That one!
Girl 2: And I think it's --

Kaitlin: Home visitors, look for opportunities to help caregivers notice and respond to the different ways young children communicate. Design activities with children's interests, explorations, culture, and ability level in mind. Children are more likely to learn from an activity that captures their interest. Remember, the world is our classroom. STEAM is not about what facts you know. It's about how you explore the world together.

Teacher: Two! three! Repel away! Repel! Repel!

Kaitlin: We hope you have new ideas to expand on the ways teachers can create environments and activities to support STEAM thinking and skills. For more information and more ideas, see the complete 15-Minute Suite on STEAM, and take a look at our tips and tools, and helpful resources.