


Lobby Question

Think of a STEAM skill that you used this morning and share it in the chat box.







Infant and Toddler Explorers: Building STEAM Skills from the Start



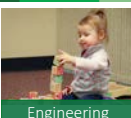
What Is STEAM?




Science



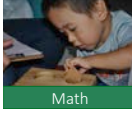
Technology




Engineering



Art





Math



Session Objectives

At the end of this webinar, you should be able to:



- Identify ways infants and toddlers naturally engage in inquiry, reasoning, and problem-solving
- Understand how STEAM is for everyone and children use it every day
- Explain at least three ways to support children's STEAM skills and thinking





Session Agenda

Here's what we're doing today:

1. STEAM and the inquiry cycle
2. Young explorers: What the research tells us
3. Strategies for supporting STEAM skills and thinking



Understanding Inquiry



You Naturally Use the Scientific Method

Observe Question
Reflect Predict
Explore

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The "A" In STEAM

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graph TD; Observe --> Question; Question --> Predict; Predict --> Explore; Explore --> Reflect; Reflect --> Observe;
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STEAM Mindset and Abilities

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STEAM Stretches Across the ELOF Domains

- Cognition (Infant/Toddler)
 - Exploration and Discovery
 - Memory
 - Reasoning and Problem-Solving
- Approaches to Learning
- Social and Emotional Development
- Language and Communication

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Young Explorers:
What the
Research Tells
Us



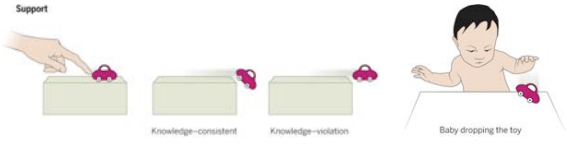

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STEAM Concepts





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Learning Through Observation and
Experimentation



Support

Knowledge-consistent Knowledge-violation Baby dropping the toy


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Schulz, 2015 (image); Stahl & Feigenson, 2015

Learning Through Observation and Experimentation

Solidity

Knowledge-consistent Knowledge-violation

Baby banging the toy

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Schulz, 2015 (image); Stahl & Feigenson, 2015

Learning Through Observation and Experimentation

Support

Knowledge-consistent Knowledge-violation

Baby dropping the toy

Solidity

Knowledge-consistent Knowledge-violation

Baby banging the toy

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Schulz, 2015 (image); Stahl & Feigenson, 2015

Learning Through Observation and Experimentation

Observe Question

Reflect Predict

Explore

Baby dropping the toy

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Schulz, 2015 (left image)

Theory-Building: Probability

Machine Marble dispenser

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Theory-Building: Probability

Machine Marble dispenser

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Theory-Building: Probability

Machine Marble dispenser

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Theory-Building: Probability

4 of 6 = 67%

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Theory-Building: Probability

2 of 6 = 33%

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Theory-Building: Probability

Machine Marble dispenser

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Making Sense of a Messy World



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(Waismeyer, Meltzoff, & Gopnik, 2015)

Learning from Music



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Trainor, Lee, & Bosnyak, 2011

Brainstorm

- How do you already support STEAM learning in infants and toddlers?



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Strategies for Supporting STEAM Skills and Thinking

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Strategies to Support STEAM Learning

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Engaging Environments

Provide open-ended materials

Use a variety of materials

Pay attention to children's interests

Engage the senses

Consider the developmental level of the child

Arrange materials so they are accessible

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Nurturing, Responsive, & Effective Interactions



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Use Scaffolds



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Introduce Basic Inquiry Skills

Observe
 What do you see / hear?
 How do they sound / smell?
 How are they the same?
 How are they different?
 What happens when you try?
 You seem curious about...

Explore / Experiment
 Let's investigate!
 What do you notice?
 What is changing?
 What did you try?
 Let's draw what we see.

Predict
 What do you think will happen?
 What are your predictions?
 Why do you think that?
 How could we find out?

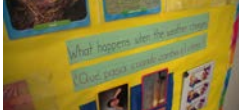
Question
 What are you curious about?
 What do you want to know?
 Are you wondering if...?

Reflect
 What were your predictions?
 What happened?
 What did you notice?
 Why do you think that happened?
 What could we investigate next?

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Speak the Language of STEAM

- Observe, observation
- Question
- Predict, prediction
- Similar, different
- Compare, contrast
- Measure
- Count
- Investigate
- Explore
- Experiment
- Test
- Discover
- Record
- Explain
- Hypothesize, hypothesis



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Invite Children to Communicate



"How are you making the wheel spin?"

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Learning Experiences / Activities



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STEAM Is For Everyone



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Wrap Up: Building STEAM Skills from the Start

"Always be on the lookout for the presence of wonder."
~ E.B. White




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Building STEAM Skills from the Start

How are you going to take what we've learned today and apply it to your work with children and their families? What additional tools or information might you need to support your work?

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Resources

Early Childhood Learning & Knowledge Center (ECLKC) – STEAM/STEM


Understanding STEAM and How Children Use It: <https://eclkc.ohs.acf.hhs.gov/publication/understanding-steam-how-children-use-it>


Marvelous Explorations through Science and Stories: <https://eclkc.ohs.acf.hhs.gov/school-readiness/article/marvelous-explorations-through-science-stories-mess>

Fostering Children's Thinking Skills: <https://eclkc.ohs.acf.hhs.gov/video/fostering-childrens-thinking-skills>

Using the Scientific Method: <https://eclkc.ohs.acf.hhs.gov/video/using-scientific-method>

Infants and Toddlers Meet the Natural World: <http://va.gapinc.org/wp-content/uploads/2012/11/2-BTJNatureMcHenry.pdf>





Resources

Early Childhood Learning & Knowledge Center (ECLKC)


Early Learning Outcomes Framework (ELOF)
<https://eclkc.ohs.acf.hhs.gov/school-readiness/article/head-start-early-learning-outcomes-framework>


House Framework for Effective Practice
<https://eclkc.ohs.acf.hhs.gov/teaching-practices/article/framework-effective-practice>

Dual Language Learners Toolkit
<https://eclkc.ohs.acf.hhs.gov/culture-language/article/dual-language-learners-toolkit>

Highly Individualized Teaching and Learning
<https://eclkc.ohs.acf.hhs.gov/children-disabilities/article/highly-individualized-teaching-learning>

Classroom Visuals and Supports
<https://eclkc.ohs.acf.hhs.gov/children-disabilities/article/classroom-visuals-supports>





Thank You!

Please fill out a survey:

