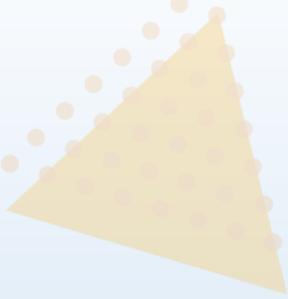


Adaptations to Routines & Activities Make STEM Happen for Infants & Toddlers



Philippa (Pip) Campbell, PhD, OTR/L, FAOTA
Christine Harradine, PhD

2021 Stemie Professional Development Webinar Series
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At the end of this introductory webinar, you will be able to begin to

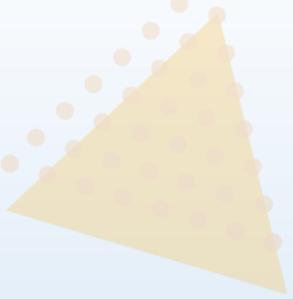


Embed	Facilitate and guide	Use	Assist
Embed Opportunities for STEM Foundational Skill Learning into everyday routines in home and child care settings	Verbally facilitate and guide STEM learning	Use adaptations to access children to routines and promote their participation in STEM learning	Assist caregivers to support STEM Learning

Four Key Components



Use or Create	Embed	Adapt	Facilitate & Guide
Naturally occurring learning opportunities	STEM foundational learning concepts such as cause-effect	Access to Learning Opportunity Adapt Materials, Instruction, or Activity	Children about what is happening; pose problems & questions;

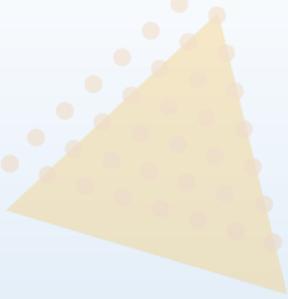


Car

nar



Apply the process --



Step 1

Take advantage of or create naturally-occurring activity(ies); Make an activity that is not going so well – go well.

Stem learning about spatial awareness and the beginning of engineering occurs in this activity

Step 2

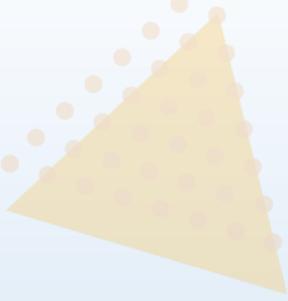
Use adaptations

- Special chair & tray allow access to block activity
- Large light-weight blocks allow physical interactions with blocks

Step 3

Verbal guidance & facilitation by adult

- What do the adults say? What might they say?



Thumbs Up/Thumbs

Down has access to activity

- Child's participation in activity

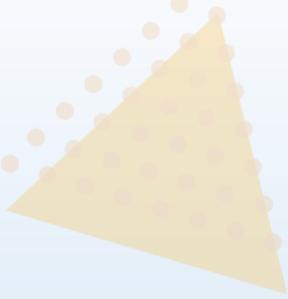
In the chat box

- What might the child be learning?
- If this were your situation, what do you think you might suggest?

What are some observations that you have about this activity in general?

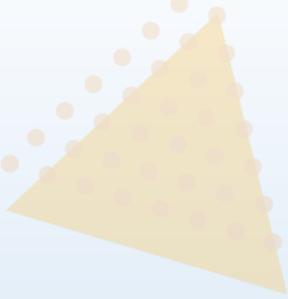
Selecting Activities & Routines in Which to Embed STEM Learning Opportunities

- Ask parents what their children like to do
- Give parents a few choices and let them pick – “would you like to try this at mealtimes, during bathtime, when you are traveling in the car?”
- Use an activity-routine checklist chart or card sort “assessment” to identify priority activities & routines
- How else? Suggestions you have --





Apply the process --



Step 1

Take advantage of or create naturally-occurring activity(ies); Make an activity that is not going so well – go well.

Bathtime going well; opportunities to learn foundational concepts such as cause-effect & volume, fill, dump, mix, temperature

Step 2

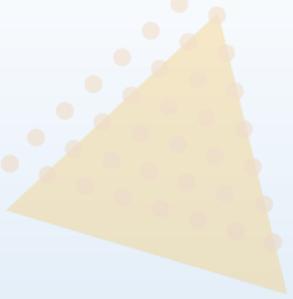
Use adaptations

- Inflatable bath insert in tub allows child to sit and use arms to manipulate toys
- Toys of various sizes, weights, etc.

Step 3

Verbal guidance & facilitation by adult

- What does the adult say? What might she say?



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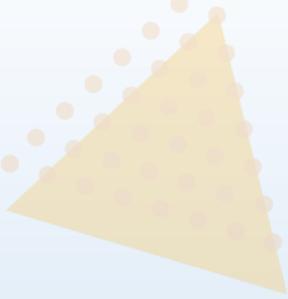


Experiencing Patterns During Snack



STEMIE offers tip sheets for engaging STEM into daily routines and activities. Check out mealtime for toddlers here:

<https://stemie.fpg.unc.edu/daily-routines-activities-your-toddler-meal-time>

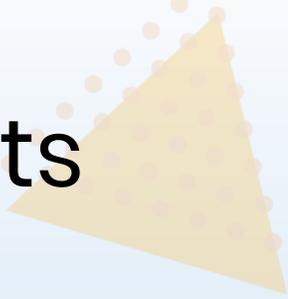


Concepts As the Foundation for Later STEM Learning



- Visual Pursuit & Object Permanence
- Means for Obtaining Desired Events (Means-End)
- Vocal Imitation
- Gestural Imitation
- Operational Causality
- Object Relations in Space
- Schemes for Relating to Objects
- Knowing that objects exist when they have visually disappeared
- **Use of a tool to obtain something**
- Repeating what is heard
- Repeating physical actions
- **Using an action for an effect**
- **Spatial relations of objects to each other**
- Use of hands as related to objects

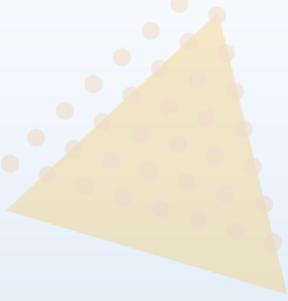
Intersection between foundational concepts & STEM cross-cutting concepts



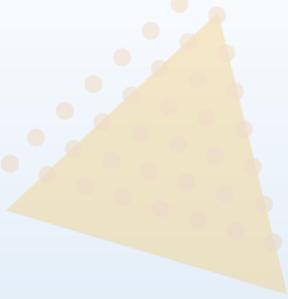
	Water	Bridges/Blocks	Patterns	Numbers
Object Permanence				
Means-End (use of tool)				
Causality (cause & effect)				
Object Relations in Space (spatial awareness)				
Manipulation schemes				
Imitation				

Now lets think about Adaptations

Lets take a poll to see what you all think about adapting
Which of the ideas below do you think best reflects your perspective – choose one



- A. Children with disabilities and delays can participate in STEM activities as long as they can reach, grasp, and manipulate materials.
- B. Infants and toddlers with disabilities and delays are less likely to be able to do STEM activities than their typically developing peers because they are not ready for STEM learning because of delays in in cognitive and language skills.
- C. In spite of disabilities or delays, all infants and toddlers are able to learn STEM foundational concepts, vocabulary, and problem-solving when they have access to situations in which they are able to engage.



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- C. In spite of disabilities or delays, all infants and toddlers are able to learn STEM foundational concepts, vocabulary, and problem-solving when they have access to situations in which they are able to engage.



We make that happen
through Adaptations
to

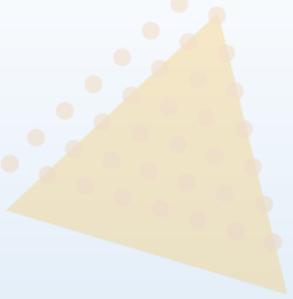
Access the activity



More Water Play



Bathtime/Swimming





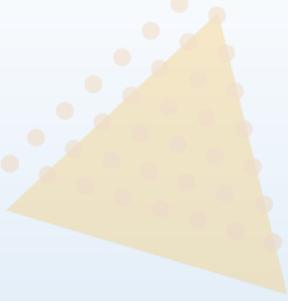
What is the adaptation(s)
that are giving him access
– and participation?

We make that happen
through Adaptations to
Materials

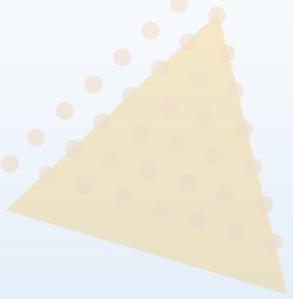


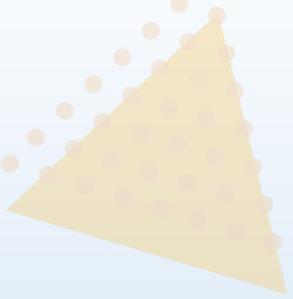


Bridges from Blocks

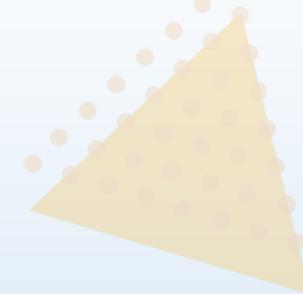
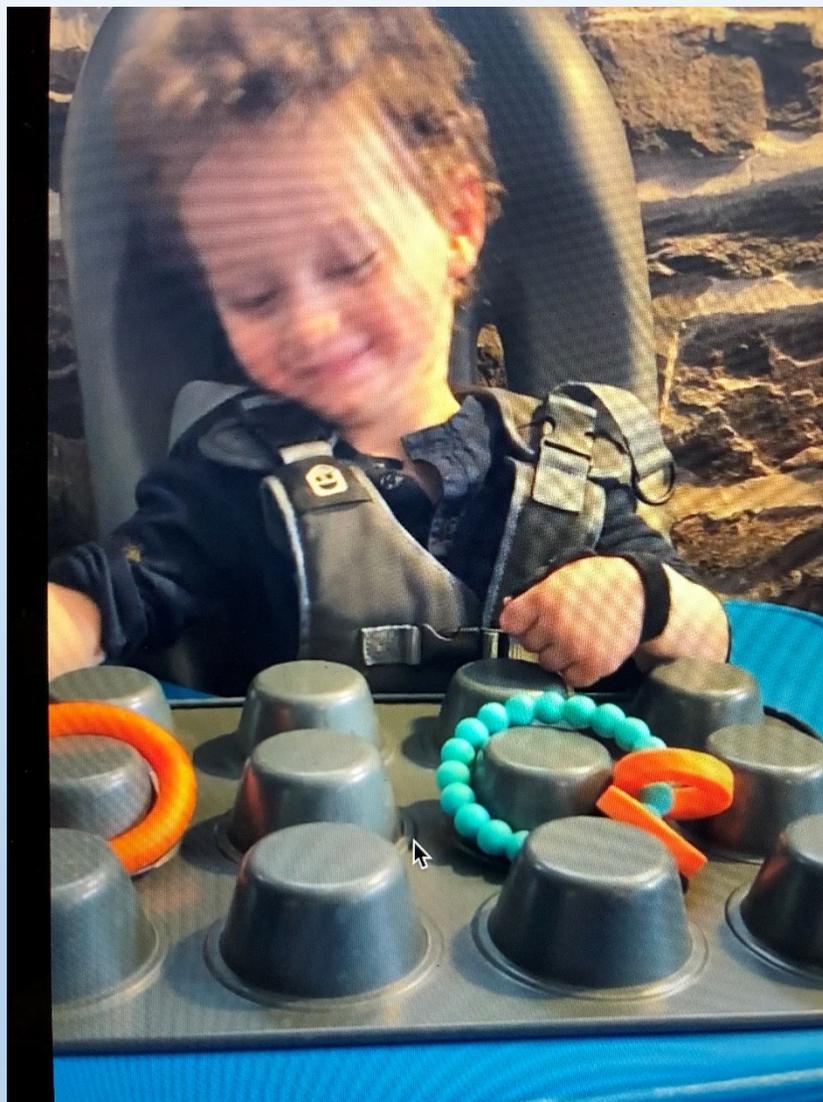


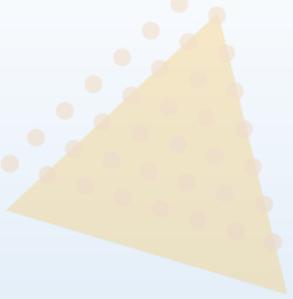
More Building

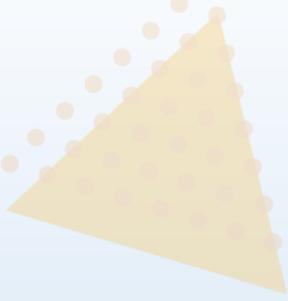




More ways to build



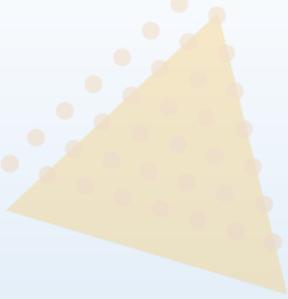




Verbal Guidance & Facilitation

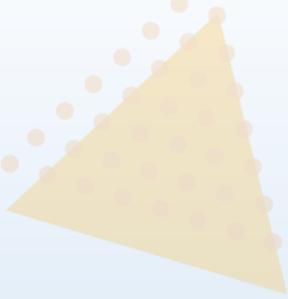
Adult may talk to:

- **Narrate** what is going on by talking about what is happening – “you are putting your hands under the water – under the wet, cold water”.
- Use **vocabulary** to describe the characteristics of the activity even if the child is just being introduced to particular words (hot/cold; wet/dry) or actions (splash, pour, dump)
- Introduce opportunities for **problem solving (scaffold)** – “I wonder what will happen if we turn on both faucets; fill this cup and dump it”



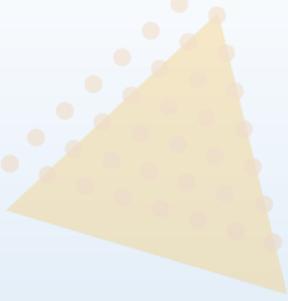
Examples with Water: Adults provide language to label (expand vocabulary) and to facilitate children's problem solving, anticipation of actions, experimentation

Action words	Fill, pour out, pour into
Temperature	Hot, cold, warm
Size	Big, little
Color	basic color words for the cups, spoons, funnels, etc.
Weight	heavy, light
Volume	Empty, full
Cause and effect	What happens when--
Use of a tool	I wonder if the washcloth will clean the toy; Can you reach the toy if you use the fishing net to push it to you



One Last Thing --

- What are your thoughts about coaching caregivers to embed STEM learning in naturally occurring activities & routines?
- What do you think caregivers need to know?
- What strategies would you use to coach caregivers?
- Other ideas?



Case Studies



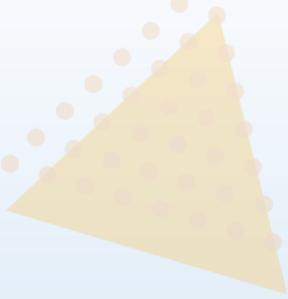
- Water/Bubbles
- Diaper Changing
- Blocks



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What might
be tried?
Think about

- Access to Routine
- What STEM concepts are there opportunities to learn?
- Any Needed Adaptations for Participation and Learning within Mealtimes
- Adult Guidance and Facilitation
 - Narrate
 - Use STEM vocabulary
 - Create problems to be solved

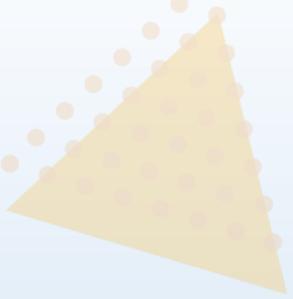


Report Out

- Access to Routine
- What STEM concepts are there opportunities to learn?
- Any Needed Adaptations for Participation and Learning within Mealtimes
- Adult Guidance and Facilitation
 - Narrate
 - Use STEM vocabulary
 - Create problems to be solved



Questions or Comments



Thanks So Much for Attending Today –

STEMIE Professional Development Webinar Series



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February 2021
10:00 AM MST/1:00 PM EST
EARLY MATH LEARNING
FOR ALL CHILDREN



TBD
Week of June 7, 2021
ENGINEERING: FOCUSING ON
THE PRACTICAL EXAMPLES



TBD
Week of March 29, 2021
STEM FOR INFANTS AND
TODDLERS



TBD
Week of August 23, 2021
COMPUTATIONAL THINKING
FOR YOUNG CHILDREN



TBD
INFORMAL STEM
LEARNING/PRACTICAL
STEM AT HOME



Week of October 4, 2021
STEMIEFEST!



STEMIE²Fest

INNOVATION FOR INCLUSION IN EARLY EDUCATION

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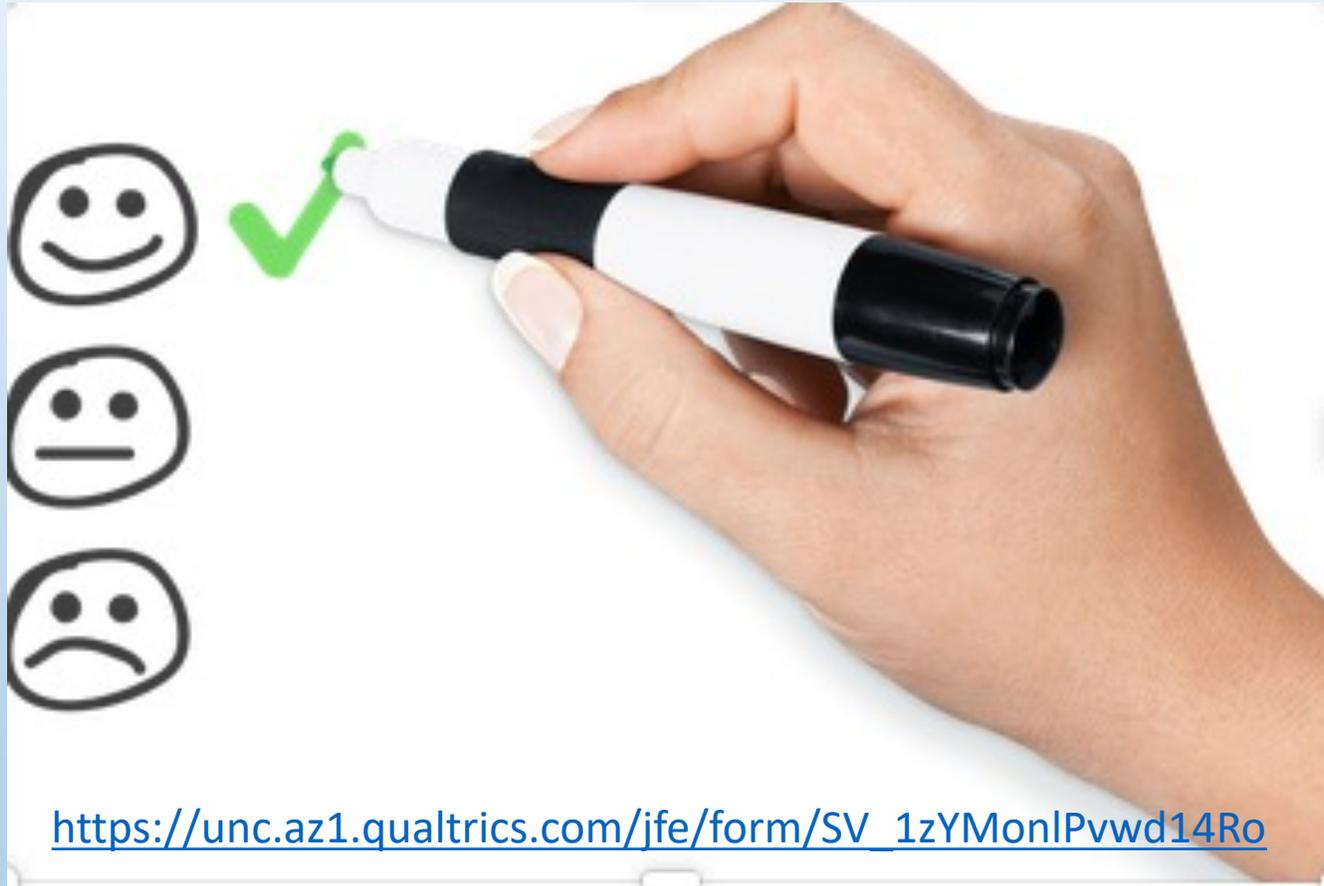
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