



STEM with Infants and Toddlers – Note Sheet

Specific ways Infants and Toddlers learn

Infants and Toddlers learn through **Experiential Learning**:

- Hands on -
- Process over Product -
- Form Ideas & Playfully Refine Ideas -
- Naturally Use the Scientific Method -
- Open-ended experiences -
- Intentional -

The role of the caregiver and teacher in supporting Infant and Toddler exploration and learning

Responsive Caregiving:

- Intentionally set up the environment
 - Safety
 - Materials
 - Connections
 - Display
 - Space
- Sit nearby to supervise and join in play/experiments
 - Positive Feedback
 - Descriptions and Narrations
 - Thoughtful Questions
- Encourage children to use all five senses during their explorations
- Observe children to learn about their interests and points of view
- Observe and document children's activities

Your Turn – Doodle the most important thing you've learned...

Materials that support STEM learning for young children

STEM activities that are appropriate for Infants and Toddlers

Additional Resources for STEM Activities with Infants and Toddlers

<https://preschoolsteam.com/stem-activities-toddlers/>

Barbre, Jean. *Baby Steps to STEM: Infant and Toddler Science, Technology, Engineering, and Math Activities*. Redleaf Press, 2017.

Beloglovsky, Miriam, and Lisa Daly. *Loose Parts 2: Inspiring Play with Infants and Toddlers*. Redleaf Press, 2016.

Bohart, Holly, et al. *Spotlight on Young Children: Exploring Play*. National Association for the Education of Young Children, 2015.

Luckenbill, Julia. "NAEYC." *STEM (Science, Technology, Engineering, and Mathematics) at the Sea* | NAEYC, www.naeyc.org/our-work/families/STEM-at-the-sea.

Nemeth, Karen, and Pamela Brillante. "Including All Children in Making and Tinkering!" *Teaching Young Children*, vol. 11, no. 2, 2018.

STEM with Infants and Toddlers – Activities

Muffin, Muffin, Who’s Got the Muffin (Inf/Tod/Two)

Materials: 2 muffin tins, small bowl, 12 small objects that are age appropriate and fit in the muffin tins, (select 12 objects that are different colors, shapes, textures, including ones that make noises)

Put the objects in the small bowl next to the muffin tins. Encourage the children to move the objects from the bowl to the tins and from 1 muffin cup to another. **NOTE:** It is developmentally appropriate for younger children to place several objects in into 1 muffin cup. Be sure to closely supervise young children to make sure that they don’t place small objects in their mouth.

Extensions:

- *Count with the children as they place objects in the cups. Place solid colored stickers with the numbers 1-12 in the bottom of each muffin cup.*
- *Describe and object properties as the children explore the items.*

Move and Groove to the Music (Inf/Tod/Two)

Materials: Music

Talk with children about how they can dance by twisting and twirling their bodies. Demonstrate the physical motions for children; twirl children under your arm or help them twirl on their own. Adults can hold and move with babies and describe the movements while dancing. Alternate tempo and beat of the music. **NOTE:** Be sure to allow enough space between children and to teach them about self space and shared space so that they don’t bump into each other.

Extensions:

- *Ask “Does the music sound fast or slow?”*
- *After playing fast music, ask children to put their hands over their hearts to feel it beating fast.*
- *Ask children to pick out their favorite musical instruments to march and beat to the music.*
- *Play rhythmic instruments – fast, slow, loud, soft, in patterns*

All the Pretty Little Flowers (Tod/Two)

Materials: *Plastic Storage bags, child sized magnifying glasses, plastic trays*

Go on a nature walk and take plastic storage bags and child sized magnifying glasses with you. Older toddlers and twos can carry their own bags for collecting items. As you walk, talk with the children about what they are seeing and hearing. Stop and investigate what you observe – living and nonliving – with the magnifying glasses. Collect flowers, leaves, and branches that have fallen on the ground and put them in the collection bags. After the walk, talk with the children about the experience. Place all of the items on one or two plastic trays to be sorted and classified. Continue to use the magnifying glasses to study the objects. **NOTE:** The discussion and sorting can be done indoors or outdoors. Be sure to closely supervise young children to make sure that they don't place small objects in their mouth.

Extensions:

- *What do you see when you look through the magnifying glass?*
- *What does the feel like? How does it feel different from the? What are the differences between this leaf and that leaf?*

Let's Play Ball - Ramps and Pathways (Inf/Tod/Two)

Materials: *balls of various sizes, boards or blocks*

Sit on the floor with the child and have your feet touching or almost touching the child's feet. With 2 hands roll the ball toward the child and verbally describe what you are doing (self-talk). Repeat the activity with the child rolling the ball toward you. Use different sized balls, different textures, etc. Repeat the activity with 2 or 3 children in the circle, asking them to roll the ball to the person across from them. When they have mastered that, add an additional, smaller ball.

Extensions:

- *As the children get older and more proficient with balls, add Ramps and Pathways. Add blocks, boards, or any kind of incline so that children can experiment with rolling balls on an incline and with the change of speed.*
- *Add small cars or trucks, anything with wheels.*
- *Add bouncing.*

Play Doh (Tod/Two)

Materials: *play doh, shape cutters, rolling pins, child safe knives, number and alphabet cookie cutters*

Children can experiment with color mixing, shapes, combining and separating, number identification, sorting, force, etc. In addition, they are developing fine motor and language skills, and being creative.

Build a Tower or a Bridge (Tod/Two)

Materials: *stackable soft foam or cardboard blocks, hollow wood blocks for two's – optional*

Model how to stack blocks. Invite children to begin building themselves. If needed, stack a few blocks and invite children to add on to your structure. Have fun when the structures tumble down. Talk with the children about problem solving by adding support and stability to structures by starting with a wide base. Comment on the height of the tower and count the blocks with them. Encourage cooperative play. Use blocks both indoor and outdoors.

Expansions:

- *Add cars, trucks, animals, recycled boxes and materials to the play experience*
- *Demonstrate building bridges and inclines*
- *Ask “How high should we make it?” “Tell me about what you are building.” “What if you add another block? Let’s see what happens.”*

Ring the Bells (Inf/Tod/Two)

Materials: *variety of bells (such as jingle bells, school bells, and cow bells) wind chimes, and whistles*

Let the children hold, feel, and hear each bell and whistle. While they explore talk with them about the different sounds that the bells make. Explain that bells and wind chimes have a clapper, and when it strikes the sides, a sound is made. Ring the bells softly, then more loudly. **NOTE:** Some children are sensitive to noise. You may want to do this activity outside. Be sure to closely supervise young children to make sure that they don't place small objects in their mouth.

Extensions:

- *Does the jingle bell sound different than the handbell?*
- *What happens when you ring 2 bells at the same time?*
- *Which bell do you like best? Why?*

Where's Spot (Tod/Two)

Materials: *Where's Spot, by Eric Hill*

Read Where's Spot. As you read, point out the scientific method – trial and error – search that Spot's mother uses. She identifies a problem, asks questions, tests the answers, keeps on trying, and eventually finds Spot.