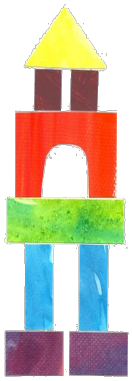
Tips to follow when introducing young children to STEM:

- Keep it simple and developmentally appropriate (i.e. a 4-year-old should not be doing an activity intended for babies in an effort to "keep it simple").
- Avoid technology. and battery-operated toys that tend to guide the child on how to play. Instead, let the child direct the explorations and learning on their own. Use technology only to research and find answers.
- Make it fun!
- Talk together. Ask questions about what you see, or why something happens (or does not happen!). Extend the child's vocabulary with new words.
- Follow your child's lead and imagination – there is no right or wrong way!
- Switch it up. Have Mom, Dad, or other primary caregivers participate/implement activities. This shows children that anyone, regardless of age or gender, can be a scientist!
- Join IN the exploration!
- Connect experiences to what children have done or experienced before.
- Simple STEM definitions:
  Early STEM is all about Brain Building in Progress!
  - Science is a way of thinking.
  - Technology is a way of using tools
  - Engineering is a way of problem solving
  - Math is a way of measuring.

Birth - 12 Months

Building



- Need: blocks and/or stacking cups (Tupperware containers work as well)
- Instructions: Build, build, and build some more! Super high towers, houses, whatever your child is building with his blocks is expanding his design process and his engineering skills. He is learning what happens when a block goes here or there or how a series of blocks builds something. Younger children may need your assistance to build up and may just enjoy knocking the tower down, and that is learning too! For younger infants look for blocks with contrasting colours and/or patterns and encourage reaching and grasping.
- STEM concepts: math, science & engineering

Water Play

- Need: play while your child is in the bath (infants can be shown), or use a large bin, water, loose parts (containers of different sizes, funnels, measuring cups, sponge, spoons/scoops, ladles, strainer, etc.)
- Instructions: Have you ever added a sponge to a water bin? Let them explore water absorption! Simply filling and dumping a variety of shaped cups introduces volume and weight and measurements.
- STEM concepts: science & math

Bubbles

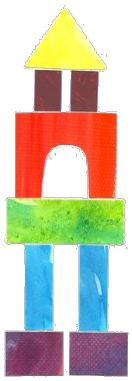
- Need: bubble solution and wand
- Instructions: Young infants may watch and observe the colors of the bubbles. Caregiver can explain that bubbles float and let baby feel the wetness of the bubbles. Encourage young infants to reach for bubbles. As the child gets older caregivers can assist the child as they dip the wand into the soapy water, model how to blow in the wand and let the child try it. Caregivers can talk about the bubbles and the way they float, the colors, etc.
- STEM Concepts: all

On/Off, In/Out, Up/Down

- Need: light switches and/or flashlights, small/medium sized box or container (empty, cleaned wipes boxes works well), various toys that fit in box, adult to lift child
- Instructions: On/Off – Use switches and flashlights and let your child experiment with how to turn them on and off (adults turn lights on/off for infants while emphasizing words); In/Out – Put toys "in" the box or bucket, then take them "out"; Up/Down – Pick up child and say, "Up." Put them down and say, "Down.". You can also use a lap song with the up/down concept like *"Smooth Road to London Town":*
  A smooth road to London Town (jiggle child gently on your knee)
  A smooth road to London Town (jiggle child gently on your knee)
  The road goes up, (lift knees/child UP)
  And the road goes down, (lift knees/child DOWN)
  A smooth road to London Town (jiggle child gently on your knee)
- STEM concepts: engineering (problem solving) & technology (ways of using tools)

13-24 Months

Building



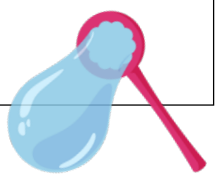
- Need: blocks and/or stacking cups (Tupperware containers work as well), and/or mega blocks, people and/or animals (optional)
- Instructions: Build, build, and build some more! Super high towers, houses, whatever your child is building with his blocks is expanding his design process and his engineering skills. He is learning what happens when a block goes here or there or how a series of blocks builds something. Younger children may need your assistance to build up and may just enjoy knocking the tower down, and that is learning too! Older toddler may enjoy creating scenes or buildings for people and animals.
- STEM concepts: math, science & engineering

Water Play

- Need: play while your child in in the bath or use a large bin, water, loose parts (containers of different sizes, funnels, measuring cups, sponge, spoons/scoops, ladles, strainer, etc.)
- Instructions: Pick a variety of objects to test out sink or float. Or try adding a toy boat and filling it with rocks to make it sink. Have you ever added a sponge to a water bin? Let them explore water absorption! Simply filling and dumping a variety of shaped cups introduces volume and weight and measurements.
- STEM concepts: science & math

Bubbles

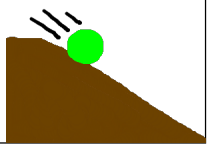
- Need: bubble solution and wand
- Instructions: Caregivers can assist older infants as they dip the wand into the soapy water, model how to blow in the wand and let the child try blowing it. Caregiver can talk about the bubbles and the way they float, the colors, etc. A toddler may have the developmental skills to handle the wand themselves. Caregivers can describe what is taking place using concepts such as big, little, wet, round, and shiny.
- STEM Concepts: all



25-36 Months

Ramps

- Need: cars and/or balls, cardboard, blocks
- Instructions: Create ramps and send down all sorts of things that go. You can also introduce things that do not roll and see what happens.
- STEM concepts: science & engineering



Shadow Dancing or Puppets

- Need: blank wall, light source like a lamp (as main lights should be off), flashlights (optional), music
- Instructions: Place a table lamp so that it will cast shadows against a blank wall. Turn off other lights and play a variety of music, encouraging children to make shadows on the wall as they dance. Challenge children to connect their shadows. Adaptations: Show younger children their shadows on the wall. Add flashlights to create multiple shadows.
- STEM concepts: science & math

Bubbles

- Need: bubble solution and wand
- Instructions: A toddler may have the developmental skills to handle the wand themselves. Caregivers can describe what is taking place using concepts such as big, little, wet, round, and shiny. Older toddlers may explore on their own. They may make their own wands with pipe cleaners or can assist caregivers in making a home-made bubble solution. Caregivers could document the experience and have child draw a picture.
- STEM Concepts: all

3 – 4 Years

Shadow Painting (Indoor) Or Drawing (Outdoor)

- Need (indoor): white paper, dark colored paint, light source like a lamp, various objects to create shadows with
- Need (outdoor): sunny day, safe area to draw, sidewalk chalk to trace with, various objects to trace
- Instructions: Darken the room and use a desk or table lamp on a table to show children how they can make shadows on paper with objects. Place object in the path of the light and paint the shadow. Talk about how the shadows change when an object is moved and encourage children to predict outcomes and observe results. Adaptations: Help younger children to trace around shadows first. Try tracing shadows outside with chalk on a sunny day.
- STEM concepts: science & math

Ramps

- Need: cars and/or balls, inclined surfaces with different textures, blocks
- Instructions: See above. Add surfaces with different textures as well to introduce the concept of friction.
- STEM concepts: science & engineering

Boat Racing

- Need: running water or large bin and straws to blow, glue and/or tape, variety of art materials and loose parts like: paper (construction or regular), feathers, sticks (Popsicle or natural), straws, leaves, pipe cleaners, containers, etc.
- Instructions: Start off by experimenting with floating and sinking. Videos about how boats are made/why they float can extend learning. Have children use materials to create different types of boats to test in water. Use straws to blow boats across still water or take boats to the gutter on rainy day. When boats sink, go back and make adjustments!
- STEM concepts: all

Bubbles

- Need: bubble solution and wand
- Instructions: Continue practicing with children to hold and blow the wand themselves. Caregivers can describe what is taking place using science vocabulary words. Children can make their own wands with pipe cleaners or use hangers for large bubbles. Try to form different shaped wands. Children can assist caregivers in making a home-made bubble solution. Try out different recipes to see what kind of bubbles they make. Caregivers could document the experience with children using drawing, photos, writing/scribbling. Caregivers can dictate the child's exact words on to the documentation.
- STEM Concepts: all