

AMBIENT STEM IN YOUR LIBRARY

Low-cost strategies for making STEM part of the daily fabric of children's lives

MEASUREMENT AND COUNTING TOOLS

- Measuring sticks
- Yard sticks
- Rulers
- Tape measures
- Height charts on wall
- Balance scale
- Postage scale
- Human scale
- Adding machine
- Play cash register with coins and bills
- Calculators
- Set of measuring cups and a lidded plastic bin with soda bottle tops to scoop up and measure
- Thermometer hanging outside window and another hanging inside

DATA AND COMMUNICATION TOOLS

- Graph paper (download at printfreegraphpaper.com)
- Handheld-sized dry erase boards and markers
- Presentation software
- Excel & Google Sheets for crunching data by youth
- Google Forms for collecting survey data by youth

MODELING, PROTOTYPING, AND ENGINEERING MATERIALS

- LEGO, K'nex, Tinkertoys, Lincoln Logs
- 3-D Modeling
- Buildwithchrome.com (online LEGOs)
- LEGO WeDo
- LEGO Mindstorm
- Junk box for one of a kind creations
- Empty boxes for stacking
- 2x4s cut into various lengths - have kids sand and paint them
- Cardboard
- Playdough

CONTINUED ON PAGE 2

OBSERVATION TOOLS

- Magnifying glasses
- Microscopes
- Telescopes
- Binoculars

QUESTIONING TOOLS

- Inquiry bulletin boards: blank paper with images and prompts to provoke children's questions and thinking
- Science journals with prompts to record thoughts
- Lap-sized white boards with dry erase markers
- Cameras to record change over time

PHENOMENA TO OBSERVE AND INVESTIGATE

- Toy Take Apart: Collection of old electronic toys with batteries removed + screwdrivers and pliers that kids can deconstruct
- Bird feeder suction-cupped to window
- Library pets
- Fossils and animal bones, real or 3-D printed (morphosource.org)
- Natural specimens (preserved fish, pinned insects, etc.)
- Fish tank
- Plants labeled with name
- Plant cuttings or new plants growing out of food scraps (e.g., potatoes, onions, carrots, avocado seeds suspended in water – use toothpicks! Put Fun-Tak -- <http://www.amazon.com/Loctite-Fun-Tak-Mounting-2-Ounce-1087306/dp/B001F57ZPW> -- on bottom of a clear jar so it cannot tip over but contents are still visible). Put an observation journal for students to record progress or take regular photos and post a digital photo frame next to the plant so children can see change over time.
- Spider plants with an observation journal so students can draw the growth over time. Host a spider baby planting party when the plant has generated enough offshoots!
- Flashlights
- Overhead projector for shadow play
- Plastic box (with lid) with beads and funnel inside
- Snap Circuits / Little Bits / Circuit Blocks (see cippgh.org/circuit-blocks)
- Tuning forks
- Magnets and magnetic objects
- Rocks
- Wind sock on pole outside window
- Seeds and seed pods

MAKER TOOLS

- See fontichiaro.com/uploads/2016/makerspace-list.pdf