



S.T.E.M. for
Infants and
Toddlers !?!

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S.T.E.M for Infants & Toddlers!?!

1. SCIENCE

- Biology
 - 1) 5 Senses 2) Nutrition 3) Body & Hygiene
- Nature
 - 1) Animals & Insects 2) Weather 3) Plants
- Physical Science
 - 1) Magnets 2) Optics 3) Other- static electricity, simple machines, etc.

2. TECHNOLOGY

Technology is anything that has been created by humans. Crayons, paints, paper, scissors, markers, dough, blocks, etc.

3. ENGINEERING

Blocks and other building items. Nesting toys, RAMPS with balls and/or cars. Empty containers, especially transparent with lids.

4. MATH

- Number and Operations
- Patterns
- Geometry and Spatial Sense
- Measurement
- Classification and Data Collection

5. ART- the “A” in S.T.E.A.M.

6. SENSORY PLAY

7. QUESTIONS?

SCIENCE, TECHNOLOGY AND ENGINEERING

HUMAN BIOLOGY

1) 5 SENSES

SIGHT- FLASHLIGHTS, COLOR PADDLES, BUG EYES, MAGNIFIERS, PHOTOS, SHAKY BOTTLES, ETC. BOOKS-“BROWN BEAR, BROWN BEAR”, “PRETTY BROWN FACE”, “I SPY” BOARD BOOKS

HEARING/SOUND- MICROPHONES, SOUND SHAKERS, INSTRUMENTS, POPPING BUBBLE WRAP (TAPED TO TABLE WITH **SUPERVISION**). BOOKS- “POLAR BEAR, POLAR BEAR”

TOUCH- TEXTURE BOOKS; SENSORY BOXES; PLAYDOUGH; SQUISHY BAGS; TAPE DOWN BUBBLE WRAP TO A TABLE AND LET THEM PLAY WITH IT. BOOKS- TOUCH & FEEL SERIES BY DK, “BABY ANIMAL KISSES”.

TASTE- CAN BE EASY TO DO SINCE YOU ARE EXPOSING THEM TO NEW FOODS AS THEY GET OLDER. TRY SERVING AN ALL ORANGE MEAL OR SNACK. DO CARROTS AND MANDARIN ORANGES AND MAC & CHEESE ALL TASTE THE SAME? THEY’RE THE SAME COLOR. WHAT’S DIFFERENT? TRY SWEET AND SALTY, CRUNCHY AND SMOOTH. NAME THEM AS THEY EAT THEM. BOOKS- “LUNCH!”, “CHEERIOS COUNTING BOOK”

SMELL- USE DIFFERENT SCENTED LIQUID SOAP; MAKE SMELLING JARS; SMELL FRESH FLOWERS, LEAVES AND GRASS. TALK ABOUT HOW FOODS SMELL AS YOU COOK AND EAT THEM. BOOKS- “I SMELL HONEY”, DK SCRATCH & SNIFF BOOKS.

GENERAL BOOKS- “MY 5 SENSES” BY ALIKI

2) NUTRITION- POSTERS ON HEALTHY FOODS WORK WELL. FOOD SORTING BAGS FROM CONSTRUCTIVE PLAYTHINGS. TASTING PARTY (STICKER OR STAMP FOR EACH NEW FOOD THEY TRY). GROCERY STORE ADS TO LOOK THROUGH. BOOKS- “VERY HUNGRY CATERPILLAR”, “EVERYONE EATS RICE”, “THE BREAD WE EAT”

3) THE BODY AND HYGEINE- KEEPING TEETH HEALTHY; HANDWASHING; COVERING COUGHS AND SNEEZES; PARTS OF THE BODY (NAMING AND POINTING TO); POSTERS ON ANATOMY/BODY SYSTEMS; ANATOMY MODELS. BOOKS- “I HAVE 2 HANDS/ I HAVE 2 FEET”, “THE FOOT BOOK”, “HAND,HAND FINGERS, THUMB”

NATURE

1) ANIMALS/INSECTS- STUFFED ANIMALS; PUPPETS; LIFE CYCLE POSTERS/MODELS; LARGE RUBBER BUGS, SNAKES, LIZARDS, FROGS, ETC; PLASTIC OR RUBBER ANIMALS (FARM, OCEAN, JUNGLE/ZOO, DINOSAURS); BUGS IN A BOTTLE BOOKS- “VERY HUNGRY CATERPILLAR” AND OTHER ERIC CARLE BOOKS, “FROM TADPOLE TO FROG”, “FROM CATERPILLAR TO

BUTTERFLY”, ANY FARM BOOK; “GOODNIGHT, GORILLA” MAGAZINES- ZOOBOOKS, RANGER RICK, YOUR BIG BACKYARD, NATL GEOGRAPHIC KIDS

2) WEATHER- POSTERS, WEATHER CHART, THUNDER TUBE, WEATHER SHAKY BOTTLES (SNOW, ICE), SQUISHY BAG WITH SHAVING CREAM FOR CLOUD FEEL; TALK ABOUT THE WEATHER AFTER COMING INSIDE FROM PLAYING. BOOKS- “THE LITTLE CLOUD”, “THE SNOWY DAY”

3) PLANTS- PLASTIC FRUITS AND VEGETABLES, SEEDS FROM FOODS YOU EAT, SEED PACKETS, DIRT TO DIG IN (SUPERVISE!), CARROTS WITH TOPS, GARDENING MAGAZINES, POSTERS, PLANTING REAL PLANTS. BOOKS- “THE CARROT SEED”, “FROM SEED TO SUNFLOWER”, “FROM ACORN TO OAK TREE”

PHYSICAL SCIENCE

1) MAGNETS MAGNET WANDS, FRIDGE ACTIVITY MAGNETS, MAGNADOODLES, HM MAGNET BOTTLES (GRITS AND METAL OBJECTS IN BOTTLE)

2) OPTICS BINOCULARS, TODDLER MICROSCOPE, MAGNIFYING GLASS, FLASHLIGHT, MIRROR, BUG EYES, COLOR PADDLES, OPTICAL EXPLORERS FROM CONSTRUCTIVE PLAYTHINGS. BOOKS- “MOUSE PAINT”, “A COLOR OF HIS OWN”

3) OTHER STATIC ELECTRICITY BOTTLE, SCALES, MEASURING CUPS, SORTING AND CLASSIFYING, SIMPLE MACHINES (GEARS, LEVERS AND PULLEYS, INCLINED PLANE)

TECHNOLOGY

Technology is more than computers, smartphones, and other devices. Technology is anything that has been created by humans. Crayons, paints, paper, scissors, markers, dough, cardboard, blocks, etc. should be the technological focus for infant and toddler programs. Blocks and block play can help children develop the fine and gross motor skills they need to use technological devices in later years.

ENGINEERING-

1) BLOCKS/BUILDING TOYS – Unit, magnetic (Tegu), Baby Tree blocks, plastic/rubber blocks, Duplos

2) RAMPS- Add in balls and cars- they will do the rest.

3) FOUND OBJECTS- Empty containers, especially clear or transparent ones with lids; paper towel/toilet paper tubes; interesting objects that meet safety requirements

Math- the “M” in S.T.E.M.

1) Number and Operations

- GIVE CHILDREN LOTS OF PRACTICE COUNTING- COUNT AS OFTEN AS YOU CAN. CALENDAR TIME (if used) FOR YOUNG CHILDREN IS PERFECT FOR COUNTING PRACTICE. SO IS SNACK! COUNT OUT NAPKINS, PLATES, CUPS. DO WE NEED MORE? DOES EVERYONE HAVE THE SAME AMOUNT?
- COUNTING CARDS MADE WITH STICKERS FOR INDIVIDUAL/GROUP COUNTING PRACTICE- USE STICKERS THAT MATCH SEASON, HOLIDAY, and THEME.
- COUNTING CARDS CAN BE USED FOR ONE-TO-ONE CORRESPONDENCE. MATCH EXTRA LARGE ERASERS OR JUMBO COUNTERS TO SIMILAR STICKERS.
- PLAY NUMBER GAMES SUCH AS “ONE HAND, TWO HANDS, ZERO HANDS”
- GIVE THE CHILDREN LOTS OF THINGS TO SORT (BY ONE ATTRIBUTE- COLOR, SHAPE, SIZE, ETC.; THEN PROGRESS TO 2 OR MORE)
- PRACTICE PUTTING THINGS IN ORDER & TALK ABOUT “FIRST, SECOND, THIRD, LAST”
- HAVE A LINE LEADER AND A LINE ENDER (1ST AND LAST)
- SAY “ZERO” AT THE END OF SONG/POEM (ZERO MONKEYS JUMPING ON THE BED, ZERO GREEN AND SPECKLED FROGS, ETC) INSTEAD OF “NO” OR “NONE”
- PRETEND PIZZA IN KITCHEN CENTER FOR FRACTION PRACTICE; PART AND WHOLE
- PLAY FOOD THAT VELCROES TOGETHER (HOW MANY PIECES?)
- SING & READ NUMBER SONGS
- NUMBER BOTTLES/TUBS
- PEG BOARDS ARE AN EXAMPLE OF ONE-TO-ONE CORRESPONDENCE; SO ARE PUZZLES

2) Patterns

- LISTENING GAMES
 - ❖ SAME/DIFFERENT NOISES- MAKE THEM OUT OF SIGHT
 - ❖ CLAPPING GAMES- REPEAT THE PATTERN
- CALENDAR PATTERNS (ABAB, AABAAB, ABBAABBA, AABBAABB) if calendar is used
- PATTERN CHILDREN ACCORDING TO SHIRT COLOR/ EYE COLOR/ HAIR COLOR OR GENDER; TAKE PICTURES TO SHOW THEM (if allowed)
- PATTERN CARDS MADE WITH STICKERS SIMILAR TO COUNTING CARDS
- READ LOTS OF STORIES AND POEMS WITH PREDICTIVE OR REPETATIVE TEXT
- PATTERN SNACK FOOD (CHOCOLATE TEDDY GRAHAMS, THEN OATMEAL TEDDIES)

3) Geometry and Spatial Sense

- SING & READ SHAPES- Frog Street Press
- MAKE SHAPE BOTTLES/TUBS
- MAGNETIC SHAPES

- PATTERN TILES- COVER MAGAZINE PICTURES OR BOOK ILLUSTRATION TO IMITATE SHAPES IN PICTURES
- GIVE DIRECTIONS THAT REQUIRE POSITIONAL WORDS
- PLAY “EYE SPY” USING POSITIONAL WORDS
- SHAPE HUNTS AROUND THE ROOM, SCHOOL, PLAYGROUND

4) Measurement

- USE NON-STANDARD MEASUREMENT DURING PLAY- HOW MANY BLOCKS TALL IS THE TABLE? HOW MANY BLOCKS TALL ARE YOU? HOW MANY BLOCKS FROM HERE TO THERE?
- MAKE A GROWTH CHART FOR THE CLASS AND CHECK PERIODICALLY
- PRACTICE PUTTING THINGS IN ORDER FROM SMALLEST TO LARGEST, LIGHTEST TO HEAVIEST
- HAVE CHILDREN PUT THEMSELVES IN ORDER FROM SHORTEST TO TALLEST, YOUNGEST TO OLDEST
- MEASURE TIME- HOW LONG TO CLEAN UP? HOW LONG TILL NEXT ACTIVITY?
- CHECK TEMPERATURE AT RECESS
- PUT RULERS AND MEASURING TAPE IN WORKSHOP/TOOL AREA
- PLANT SEEDS AND MEASURE PLANT GROWTH

(5) Classification and Data Collection

- REMEMBER, START WITH **ONE** ATTRIBUTE TO SORT BY OR MATCH WITH; INCREASE THE COMPLEXITY AS THE YEAR GOES ON.
- CLIPBOARD MATH- A CLIPBOARD WITH 2-3 PICTURE CHOICES REPRESENTING THINGS TO GRAPH BY.
- FIND SOMETHING TO GRAPH EVERY DAY DURING GROUP TIME. MAKE A LIST OF QUESTIONS AND LET SOMEONE CHOOSE ONE FROM THE STACK. (for twos and up)
- HAVE A GRAPH LISTING CHILDREN’S AGE RANGE. PUNCH A HOLE UNDER THE NUMBERS AND GIVE EACH CHILD A LINK TO HANG UNDER THE NUMBER THAT REPRESENTS THEIR AGE. ON A CHILD’S BIRTHDAY, THEY GET TO MOVE THEIR LINK!
- HAVE A STAR STUDENT OF THE WEEK OR MONTH AND COLLECT DATA ON THEM. MAKE A POSTER ABOUT THEM.
- KEEP A BASKET OF SOCKS OR GLOVES FOR SORTING/MATCHING.

Older Infant/Toddler Art Tips

- Remember that it's the process, not the product, that's important.
- Plan simple art projects to avoid confusing and frustrating your toddlers. Just give infants the experience with the materials and the freedom to explore the materials- this does not mean letting them have free access to the surrounding environment.
- Keep an open mind-your toddlers may have different ideas about how to use the materials you've provided.
- Sit down with your toddlers as they are creating. Talk about what they're doing and join in the creative process. Offer suggestions by modeling them, rather than explaining them.
- Add a few drops of liquid dishwashing soap to tempera paint. This makes the paint easier to wash off hands and clothes.
- The children will love "painting" with water. Works well with colored or butcher paper. Great for outside time.
- Use empty yogurt containers with lids as paint containers. When the paint is gone, just throw the containers away. Five oz. Dixie cups also work.
- Toddlers love using paintbrushes, but they may also enjoy painting with such things as spoons, large feathers, small tree branches (fresh leaves), dish brushes and sponges.
- Tape three or four regular crayons together to make a crayon just the right size for a toddler's hand.
- Cover a table with butcher paper and let children draw or paint all over it.
- Invite your toddlers to stand up while drawing or finger painting. This allows them to involve their arms and bodies in the process. Be sure to give your child plenty of space for moving around.

Art About Me

Your toddlers will love these art projects featuring themselves.

Handprint Place Mats

Let your child fingerprint on a baking sheet. Encourage your child to use palms, fingers, thumbs, and his or her whole hands to make designs in the fingerprint. When your child is finished, help him or her make handprints on several sheets of construction paper. When the paint is dry, cover the papers with clear self-stick paper (or have them laminated). Use your child's Handprint Place Mats at meal times.

Footprints Mural

Tape a length of wrapping paper to a washable floor or to the sidewalk outside. Make sure the plain side of the wrapping paper is facing up. Pour a little tempera paint into a pan. Help your child step into the paint and then walk across the wrapping paper, leaving his or her footprints behind.

A Picture of Me

Drape a blanket over a table to make a fort. Toss a few pillows into the fort and climb in with your child. Take a flashlight and make light designs on the blanket walls, or bring in a book to read.



Picnic Art

What's for Lunch?

Look through magazines with your child to find pictures of his or her favorite foods. Cut out the food pictures. Have your child glue the pictures to a paper plate to make a picnic "lunch." If you wish, help your child prepare a paper plate "lunch" for each member of your family.

Picnic Basket

Roll down the sides of a large paper grocery bag and attach a construction paper handle to make a Picnic Basket. Have your child decorate the basket with markers, crayons, or stickers. Let your child fill the basket with toy food. Spread a blanket on the floor and have a pretend picnic.



Circle Art

Circle Prints

Pour a small amount of paint on a paper plate. Collect several different round objects such as an empty yogurt container, a plastic cup, and a cardboard tube. Give your child a construction-paper circle. Show your child how to press the objects into the paint and then onto the paper circle to make Circle Prints.

Ladybug Spots

Cut a large circle out of red construction paper and smaller circles out of black construction paper. Let your child glue the black spots onto the red circle to make Ladybug Spots.

SHAKEY BOTTLES AND SQUISHY BAGS

SQUISHY BAGS

HAIR GEL	COOKED SPAGHETTI
SHAVING CREAM	CORNSTARCH/WATER
RICE (cooked or dry)	HAND LOTION
SUGAR	TEMPERA PAINT
BEANS	JELLO
JAM OR JELLY	WARM OATMEAL
SPONGE & COLORED WATER	
SHAVING CREAM WITH A DROP OF COLOR	
2 PRIMARY COLORS OF TEMPERA PAINT TO MIX	

SHAKEY BOTTLES

COLORED WATER
GLITTER & WATER
SMALL AMOUNT OF CORN SYRUP/THICK SHAMPOO
SOAPY COLORED WATER
CONFETTI IN WATER OR BABY OIL
SEQUINS OR BEADS IN WATER OR BABY OIL
SOUND SHAKERS- BEANS, RICE, PASTA, BELLS, WATER, LARGE PAPER CLIPS
TEMPERATURE BOTTLES- VERY WARM, ROOM TEMPERATURE AND FROZEN WATER
WAVE BOTTLE- SMALL AMOUNT OF WATER, COLOR WITH TUB TINTS, FILL WITH BABY OIL
BIRTHDAY BOTTLE- WATER, SEQUINS, GLITTER, BIRTHDAY CANDLES
STRESS BOTTLE- CRAYON SHAVINGS, WATER
MAGNET BOTTLE- GRITS, SAND, RICE, OATMEAL, MAGNETIC ITEMS LIKE PINS, PAPER CLIPS, NAILS USE MAGNET WAND TO ATTRACT ITEMS TO SIDE
I SPY BOTTLE- SALT, SAND OR GRITS, SMALL TOYS OR OBJECTS. SHAKE BOTTLE TO HIDE OBJECTS, THEN ROLL OR SHAKE TO REVEAL
CREEPY BOTTLE- HAIR GEL AND GOOGLY EYES
SWIMMY BOTTLE- WATER, SMALL SHELLS, SAND OR AQUARIUM ROCKS, SMALL FISH

HINTS- USE FREEZER BAGS, SEAL WITH COLORED DUCT TAPE (CLEAR PACKAGE TAPE CAN ALSO WORK). USE THE CLEAR TAPE TO TAPE IT DOWN TO TABLE, HIGH CHAIR TRAY, ETC. USE CLEAR SMALL WATER BOTTLES, GERBER PLASTIC 4OZ JUICE BOTTLES, COKE BOTTLES, PEANUT BUTTER JARS, ETC. TAKE OFF LABELS WITH WARM WATER, RESIDUE WITH GOO GONE OR DE-SOLVE-IT. SEAL BY CLOSING TIGHTLY AND RUNNING A BEAD OF HOT GLUE AROUND THE **OUTSIDE** OF THE CAP OR USING COLORED DUCT TAPE. ROTATE THE BOTTLES- DON'T PUT THEM ALL OUT AT ONCE. **BABY SODA BOTTLES-** STEVE SPANGLER WWW.STEVESPANGLER.COM ALSO TRY US TOYS, LAKESHORE, DISCOUNT SCHOOL SUPPLY AND CREATIVE EDUCATIONAL SURPLUS.

WATER/SAND/SENSORY PLAY

IMPORTANT THINGS TO REMEMBER ABOUT SENSORY PLAY

1. **SENSORY TABLES CAN BE:**

WATER TABLE	SAND TABLE
DISH PAN	SHALLOW BOX
ZIPLOC BAGS	SHOE & SWEATER BOXES
CAKE PANS	DISPOSABLE FOIL PANS
PLASTIC BOTTLES	SHALLOW BOWL

DEEP HIGH CHAIR TRAY WITH **SMALL** AMOUNT OF WATER (for toddlers)
2. **VARY THE WATER:**

WARM WATER	ICE WATER
ICE	COLORED WATER (TUB TINTS)
SCENTED WATER	SOAPY WATER
3. **VARY THE ACTIVITY:**

WASH BABY DOLLS/DOLL CLOTHES
WASHCLOTHS
PLAY DISHES
PLAY FOOD
REAL FOOD (WITH DISH BRUSHES)
LARGE ROCKS (WITH A SCRUB BRUSH)
BIG SHELLS
THEME RELATED ITEMS- FISH, AQUARIUM ROCKS & PLANTS; CORN COB LITTER & DINOS OR SPACEMEN; PUMPKINS, ACORNS, FALL LEAVES; DRY OATMEAL, SPOONS, BOWLS, TOY BEARS
4. **VARY THE MATERIAL:**

DRY RAW OATMEAL
EASTER GRASS (ESPECIALLY THE PAPER KIND) OR SHREDDED PAPER
CRACKED CORN COB LITTER
DIRT (BAGGED/PURCHASED FOR CLEANLINESS)
LEAVES (REAL OR SILK)
BARK MULCH
COTTON BALLS
CEDAR OR PINE SHAVINGS
SILK FLOWERS AND LEAVES
DRIED PASTA, RICE, LARGE BEANS (SUPERVISE!)
SHAVING CREAM
POWDERED "SNOW"
CORNSTARCH
5. **VARY THE LOCATION:**

INSIDE/OUTSIDE