

### BETTER · KID · CARE

## Topic: Mathematical and Scientific Thinking

### Introduction

Children are born curious! Figuring out how their world works is in their DNA. By the time babies have reached their first birthday, they have logged thousands of hours of watching, listening, touching, tasting and smelling everything around them. Their rapidly developing brains have been noticing differences between things, events that happen the same way every time, and how they can make events happen. In short, they've already been practicing the most basic of math and science skills! This Nurturing Learning looks at developmental changes in babies' second year that impact their math and science thinking and how caregivers can nurture their new abilities.

### Exploring Properties

#### What children are doing:

One-year-olds (Ones) continue to use their senses to explore properties – colors, shapes, textures, etc. – of objects around them. Now that they are gaining more eye-hand coordination and mobility, caregivers will also notice them exploring spaces and shapes, fitting things (including themselves!) inside of spaces, and dumping and filling containers.

#### What caregivers can provide:

- Lots of different sized containers with toys\* and materials\* that babies can fill and dump out (not too small, though – remember choking hazard guidelines: if it's smaller than the end of a toilet paper roll, it's too small).
- Opportunities to use containers to fill and dump water. Stay within arm's reach for safety when children play with water.
- Simple shape puzzles with knobs as one-year-olds get older.
- Different objects to explore that share the same color.

#### What caregivers can say and do:

- Caregivers can use descriptive words as they talk to children about their actions and the materials they are using. ("You're putting the balls in the bucket. Now you dumped them out!" "Is that water cold?" "That made a loud sound, didn't it?" "Now you're inside the box!")

#### **\*Choking Cautions**

Young children can choke on small objects and toy parts. All items used for children under three years of age and any children who put toys in their mouths should be at least 1¾ inch in diameter and between 1 inch and 2¾ inches in length. Oval balls and toys should be at least 1¾ inch in diameter. Toys should meet federal small parts standards. Any toys or games labeled as unsuitable for children under three should not be used.

Other items that pose a safety risk and should not be accessible to children under three include, but are not limited to: button batteries, magnets, plastic bags, styrofoam objects, coins, balloons, latex gloves, and glitter.





## Noticing Differences

### What children are doing:

One-year-olds are very aware of differences and love to explore them. Ones notice differences in how things look, sound, taste, feel and smell. By giving ones opportunities to compare differences, caregivers can help them further develop their observation skills, which are a key component of later science inquiry and mathematical problem solving. Caregivers can also begin to build the vocabulary to describe those differences.

### What caregivers can provide:

- Sight and sound tubes: These sealed containers are filled with different objects (bells, feathers, sequins, etc.) that children can see and hear as they move or shake the container. Babies can notice differences in color, sound, and movement for starters. (Caregivers can make their own out of plastic containers, but should be sure that the lids are firmly sealed to prevent children from emptying, and perhaps choking on, the contents.)

- A collection of textures in a container/bin for children to explore, such as pieces of sandpaper, corduroy, sticky paper (like Contac™), bubble wrap, sponges, etc. Or, caregivers can also use a large, flat box lid and a hot glue gun to firmly attach all of the different textures onto one surface.
- Items from nature: Caregivers can gather items, keeping in mind comparisons and contrasts. Caregivers can collect pinecones of different sizes, shells of different shapes, or feathers of different colors, for example.
- Musical or rhythm instruments with a range of tones (for example, a keyboard or xylophone, different sized bells, drums of different types).

### What caregivers can say and do:

- In addition to using comparison words while talking with children as they explore, caregivers can also help focus their attention on likenesses and differences. For example, caregivers can lay objects of different sizes side by side on a table or limit fingerpainting colors to two.
- Caregivers can also encourage children to make different sounds with their bodies: clap quickly/slowly, beat a drum loudly/softly. Children this age will imitate almost any action, so caregivers can take advantage and turn babies' love of imitation into a learning tool!



## Recognizing Amounts

### What children are doing:

Even though one-year-olds are too young to count, they are aware of differences in amounts. In the math world, this is called number sense.

### What caregivers can provide:

- The basic math concept of number/amount is everywhere – no special materials are needed! What caregivers can provide is their own awareness of numbers in everyday experiences!

### What caregivers can say and do:

- Use words that refer to amounts throughout the day (“Do you want more carrots?” “They’re all gone.” “She doesn’t have any. Let’s give her some.” “Wow, you have so many blocks!”).
- Play simple clapping games: Modeling simple clapping patterns (clap-clap-clap...pause...clap-clap-clap) captures and focuses babies’ attention on these basic math concepts in a fun way that they can then repeat and experiment with.

## Making Changes

### What children are doing:

One-year-olds are all about doing and then seeing what happens! The voice of their inborn scientist is constantly asking “I wonder what would happen if I...” They are very interested in actions and reactions, cause and effect – especially when they are the ones who provide the action. Caregivers can tell when curiosity is behind an action by the intense look of observation on their faces.

### What caregivers can provide:

- Toys that children can act on, and that respond when babies perform a simple action.
- Toys and tools for water and sand play.
- Table blocks.
- Fingerpainting or painting with various objects that create different effects.

### What caregivers can say and do:

- Recognize the curiosity behind children’s cause-and-effect actions and comment on it (“What happened? Did the blocks fall down when you kicked them?”).
- Model an action that will create a different effect or outcome and encourage the child to repeat it.
- Imitate an action that a child just did and narrate – describe what was done and what happened next. By letting the child lead, caregivers are communicating the message that what the baby did was interesting and worth doing again.

## Keep in mind

One of the most dramatic changes in the second year of life is mobility – babies’ ability to get around on their own two feet. With time and practice, this ability enables them to interact more and more with the objects and people around them, which in turn gives them more and more information about those objects and people. It also means that they can perform many more types of actions (and then observe the results). It’s also what makes this stage of childhood so exhausting for caregivers – these children are suddenly into everything. While it’s important to set limits to keep them physically safe, caregivers can appreciate that much of babies’ activity is fueled by curiosity and the need to figure out their world – and that’s a good thing.

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### Topic: Mathematical and Scientific Thinking

#### Introduction:

Children are born curious! And no one is more curious than a two-year-old! “Twos” seem to be into everything, adamantly demanding to do things themselves. Although this age can be trying for caregivers, it’s also an age in which children are gaining a remarkable amount of knowledge about how the world works. It’s also a year in which they gain the incredible ability to talk – to communicate in a new way what they are noticing and thinking. This “Nurturing Learning” focuses on how twos learn about their world and how caring adults can support that learning.

#### What caregivers can say and do:

- Watch what a child does with the materials, notice what he or she seems to be experimenting with, and then comment on his/her discoveries.
- One of the best ways to encourage further exploration is to ask, “What else can you do/try?” You can vary the question depending on the materials, but keep it open-ended, so children are encouraged to try out their own ideas.

#### Making Things Happen

##### What children are doing:

Twos (two-year-olds) are all about action! They are fascinated by performing an action and watching what happens next. It’s not enough to watch someone else do it – they want to do it themselves, sometimes over and over again! They are also becoming curious about what will happen if they change their action: will the result change, too? This is a key element of scientific thinking.

##### What caregivers can provide:

Ways for children to modify familiar materials/activities.

- Sand/water table with variations: Let children add water to dry sand, or add food coloring or snow to water.
- Painting variations: Let children “paint” with objects that will create different patterns in/with the paint (toy cars/trucks, sponges, feathers, shape blocks, puzzle pieces).
- Ramps and cars, tubes and balls, a balance (store-bought or made with a long board), and other materials that children can use to experiment with changes in movement.





## Sorting and Categorizing

### What children are doing:

By the time children are two, they have a lot of experience in recognizing similarities and differences and are beginning to group things that go together (i.e., categorize). Learning verbal labels for groups (animals, food, shoes, toys) provides an important boost to their ability to understand the concept of categories.

### What caregivers can provide:

- Collections of items that can be sorted and grouped by color, shape, or other obvious characteristics.
- Containers to store toys that go together. When part of the clean-up routine is to “put all the blocks in this bin” and “put all the baby dolls in this basket,” two-year-olds are practicing their understanding of categories.
- Children’s books that show pictures of different objects in a category (animals, trucks, fruit).

### What caregivers can say and do:

- Rather than verbally quizzing the twos as they are sorting, offer comments that emphasize the characteristic that is the same when they get it right (“That’s a car, too, isn’t it? It has wheels”). When they don’t get it right, caregivers can demonstrate why that one object doesn’t belong (“Let’s put all the hats in the box. Uh oh, I can’t wear this on my head, can I? That would be silly! It must not be a hat”). Adding some humor helps everyone feel okay about getting it “wrong” sometimes.

## Using Their Whole Bodies

### What children are doing:

Learning is a full-contact sport for twos! The more of their bodies and their senses that they can use during learning activities, the more interested they will be and the more they will take away from the experience.

### What caregivers can provide:

- Movement activities, songs, and rhymes that use children’s bodies to teach concepts (moving their bodies fast, slow, up, down, etc.; counting songs/ games; sorting themselves into groups by gender, clothing color, etc.).
- Opportunities to play with large objects, such as exercise balls (e.g., the kind used for Pilates) and empty but sealed cardboard boxes. Brainstorm materials that children need their whole bodies to interact with and that will respond differently to their actions than smaller objects (think about how a large bouncing ball differs from a small one).

### What caregivers can say and do:

- One simple way to acknowledge twos’ need to use their whole bodies is to reassess the activities for which children typically sit down and the caregiver can ask, “Is there any reason why the children couldn’t do this activity standing up?” One option, for example, is to move some of the chairs away from the table where there are paints or puzzles set up to encourage children to stand while working with them.

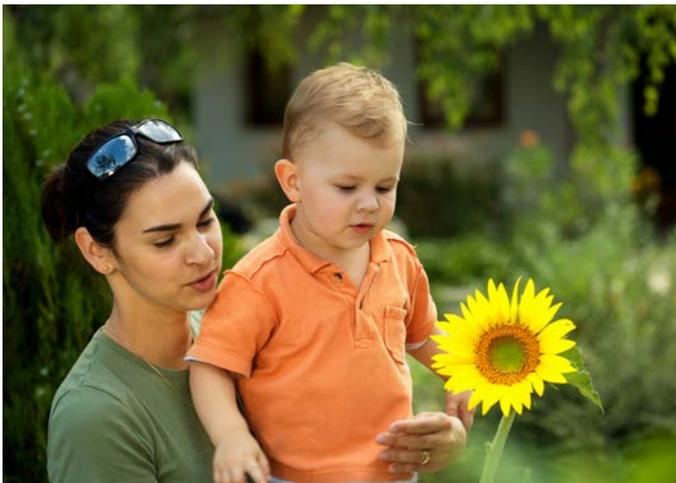
## Wondering About Living Things

### What children are doing:

Although they've been able to tell the difference between living and non-living things for quite a while, twos are becoming more attuned to what it means to take care of a living thing, whether it is plant or animal. They are especially curious about different animals in their environment (including insects, worms, and mice!) and are puzzling through how they are the same as people and how they are different.

### What caregivers can provide:

- Opportunities to examine, observe, and (when possible) interact with real animals and plants in order to gain factual knowledge. This includes books with photos of the real thing.
- Pretend replicas (e.g., plastic animals/insects, stuffed animals/puppets, silk flowers/plants) that encourage children to act out their growing knowledge in pretend play. Pretend animals and plants can also be compared to the real thing, encouraging children's observation skills.
- Tools to encourage closer observation: magnifiers, binoculars, etc.
- Puzzles that depict animal or plant parts or different species of living things within the same category (e.g., a variety of butterflies, birds, flowers).



### What caregivers can say and do:

- Be careful observers; notice what individual children are noticing, what questions they ask or comments they make. Notice what aspects of animal life their pretend play includes. Adults should not assume that they know what twos are curious about – let their words and actions speak.
- This is a great time to begin modeling and encouraging positive, caring attitudes toward other living things. "Be gentle," "It's time to give our plants some water so they can grow," and "Let's be quiet, they're sleeping right now," are all examples that convey the message to children that they can help care for living things in many of the same ways that they themselves are cared for.

### Keep in mind

By their second birthday, toddlers are well into a phase of child development experts call the "language explosion," characterized by rapid learning of new words. They are also learning how to put words together into brief sentences. What does this mean for science and math learning? It means that caregivers have a new way of finding out what two-year-olds are thinking when they are exploring and experimenting, so adults can take advantage of it! It also means twos' language skills can be intentionally built by introducing new words and modeling more complex sentences, all in the relaxed and interesting context of conversations about their explorations.

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##### Introduction

The preschool years, ages three and four, are a busy time for young children's minds. When given encouragement and support, they can become immersed in extensive explorations of topics that interest them. Whether it's dinosaurs or rainbows or airplanes that capture their attention and imagination, preschoolers are rapidly developing the mental abilities to think in mathematical and scientific ways in order to explore and understand their favorite topics. Preschoolers are also seeing evidence of math and science concepts in everyday life, from laying out the right number of napkins for snack to predicting and testing the direction a ball will go when it's kicked. In this Nurturing Learning we'll look at the abilities that preschoolers are developing that help them think in more complex ways.

- Books that illustrate the insides of animals, plants, buildings, machines, etc.
- Opportunities to take apart and examine the insides of plants, seeds, etc.; tools for exploration (magnifiers, tweezers); and paper and pencils to record what they see.
- Cooking and baking experiences, allowing children to participate in combining ingredients to make a finished dish.

##### What caregivers can say and do:

- Encourage children to continue their work over multiple days by setting apart a place for continuing work to be kept where it won't be disturbed.
- Model and extend children's curiosity ("I wonder what it looks like inside. What do you think we'll find in there? How could we find out?").
- Ask children to describe their thinking and decisions as they build ("What did you do next?" "That's interesting. What does that part do?" "What else will you need?").

##### Taking Apart and Putting Together

###### What children are doing:

Threes and fours are playing with the concepts of parts and wholes. They are fascinated by the insides of both mechanical things and living things and how the different parts make the whole thing work. They are also gaining in their understanding of how to put many parts together to make a whole. Everything they create becomes more complex and elaborate: the structures they build, the stories they tell, and the artwork they create.

###### What caregivers can provide:

- Puzzles, including floor puzzles, with a range of difficulty.
- Building sets with a variety of parts, marble mazes, "found" materials (cardboard and wood scraps, heavy-duty tape) to build with.
- Discarded small appliances and real tools to take them apart.





## Observing Changes in Themselves

### What children are doing:

Preschoolers are keenly curious about themselves. They love seeing and talking about pictures of their younger selves; they express pride in how they've grown and changed. This fascination with personal growth is a wonderful context in which to introduce measurement, charting, recording observations, and other math and science skills.

### What caregivers can provide:

- Tools to measure height and weight (start with non-standard ways of measuring and then introduce standard measurement tools, such as rulers, later).
- Opportunities to record their measurements and observations.
- Photo displays of children as babies and toddlers.
- Children's books, both fictional and nonfictional, that focus on growth and change in children.

### What caregivers can do and say:

- Adults put so much emphasis on getting bigger that young children, in comparing themselves to each other, put more value on being taller than others, which can result in hurt feelings for those who are on the shorter side. Emphasize that people come in all heights and weights and that what is worth getting excited about is noticing and recording their own growth over time, rather than being taller than other children.
- Size is the most obvious aspect of growth, but help children focus on other ways that they have changed, too. Record their responses.
- Extend children's interest in their own growth to the growth and development of other living things. Invite children to investigate the growth of animals from babies to adults and talk about how their development is different. Encourage measuring, counting, charting, and recording.

## Creating Representations

### What children are doing:

- As preschoolers get older, they become more skilled and interested in recreating accurate models of things they've observed. Drawing or sculpting a representation to be incorporated into a scientific exploration can actually help young children focus their attention on details they otherwise might have missed. When they are intent on drawing the insect, fish, or flower exactly the way they see it, they notice much more detail, which in turn fuels more curiosity. Even young preschoolers show an amazing level of attention, focus, and interest when representational drawing and sculpting is part of their investigation.

### What caregivers can provide:

- Drawing and painting tools that support more detailed drawing: colored pencils, fine-point markers, etc.
- Firmer modeling clay (instead of play dough) and tools to encourage detailed sculpting.
- An area where children can display their work without danger of being destroyed, or offer to take a photo that the child can keep, talk about, and reproduce if desired.

### What caregivers can say and do:

- Talk to children about creating models from observations and how it's different than creating from their imagination. Consider showing examples of illustrations from children's books that show each.
- Talk to children as they are recreating what they see; comment on the details that the adult notices represented in their model. If children are stuck, adults can help them focus on specific parts of the animal or plant by talking about shape, line, and color to help children think of how they could be recreated.

## Recognizing Numerals

### What children are doing:

At some point during the preschool years, children make the connection that a particular written squiggle – “5” for example – represents an amount and corresponds to the verbal word for that amount. Since there's nothing about the squiggle (or, more accurately, symbol) that looks like the amount it represents (there aren't five lines or dots in the symbol “5”), children can only learn the names and symbols for each amount



through lots and lots of exposure and use in the context of play and everyday activity.

### What caregivers can provide:

- Games that include written numerals.
- Puzzles, books, charts and other materials that link written numerals with their amounts.

### What caregivers can say and do:

- Incorporate counting, verbal labels, and written symbols in everyday activity. (“How many children want strawberries on their yogurt? One, two, three four – okay ‘four’ children. Let’s write that on our chart – here’s the number ‘4’ and I’ll put four dots next to it so we can remember.”).
- Give children models of numerals that they can refer to, but don’t be concerned about the accuracy of their early attempts. Curved and diagonal lines are difficult for little fingers to make. Children will write numerals backwards and sideways as they learn. Over time they will improve as they find meaningful ways to practice. What won’t help is a lot of correction or meaningless repetition/practice, which only makes children fearful of making a mistake and less motivated to write on their own.

## Keep in mind

Scientific thinking involves making predictions about what will happen next, testing those predictions and observing the outcome, recording that outcome in some way, and telling others about what’s been discovered. Mathematical thinking includes not only knowing numerals and counting, but also creating patterns, recognizing geometric shapes, measuring, and organizing numeric information using charts and graphs. Although all of that sounds far beyond the capabilities of most preschoolers, it’s really not! Preschoolers can learn all of these skills, and will do so eagerly, if those skills are embedded in activities and explorations that are centered on children’s interests and curiosity.

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### Topic: Arts and Creativity

#### Introduction

Can one-year-olds (“ones”) truly be creative? If we step away from artistic expressions of creativity for a moment and just think about the essence of creativity, the answer is a loud “Yes!” Creativity is expressing one’s own idea, trying new things, and experimenting with changing materials. Ones spend more time than most adults exploring things in new ways and trying out their ideas, without caring what anyone else thinks! The job of early childhood professionals is to give them interesting materials to tinker with, and a positive atmosphere where trying out their own ideas is encouraged. With ones, it’s all about exploring the materials, not about a final piece of art!

#### What caregivers can say and do:

- The most important message to convey with words, facial expressions, and actions is that it’s okay to touch, smear, and generally get messy!
- Some children are very reluctant to get messy and/or experience certain textures as uncomfortable to the touch. Let children decide if and when they will participate; they may just want to watch. Adults can also offer a less messy alternative by putting gooey or messy substances into a sealed plastic bag, which will allow young children to explore the substance without getting it on their skin.

#### Exploring with Eyes and Hands

##### What children are doing:

We often think of artistic expressions of creativity as being all visual – making things that are pretty to look at. But ones are very tactile, wanting to touch and feel everything. We need to think not only of ways they can experiment with appearance, such as mixing colors, but also with textures.

##### What caregivers can provide:

- Changes in texture: After children have had time exploring a smooth substance (ex.: non-toxic paint, cornstarch and water mixture), let them add some texture, such as uncooked oatmeal, coffee grounds, or cornmeal (but nothing big enough to be a choking hazard).
- Different textured objects to paint with: sponges, cotton balls, wooden or foam blocks, bubble wrap, crumpled foil, plastic pot scrubbers, etc.
- Different textures to paint on: different types of paper, foil, fabric, plexiglass, sandpaper, bubble wrap, etc.



## Building Muscle Strength and Coordination

### What children are doing:

Ones have a long way to go before they have enough muscle control and coordination in their fingers, hands, and arms to be able to hold and control markers, narrow paint brushes, or skinny crayons, and to stay within the boundaries of typical-sized paper. When given something to mark or paint with, one-year-olds tend to make big marks using their whole arms. With lots of practice, their muscles will become stronger and more coordinated, so adults should encourage art activities that allow for whole hand and arm movements.

### What caregivers can provide:

- Fat, thick crayons, markers, chalk, and paint brushes that ones are able to grasp with their whole hand.
- Large canvases: a piece of butcher paper or sheet of plastic covering a whole table top (or skip the covering altogether and use the table top itself); a large but shallow cardboard box lid; a large piece of paper taped to the wall or laid on the floor; buckets of water and large paint brushes to use on an outside wall or sidewalk.
- Opportunities to use play dough and other types of squishable materials that help to strengthen ones' hands and fingers while also inviting their creative exploration.

### What caregivers can say and do:

- If the marks or paints stray toward an area that is out of bounds, gently guide children back to where their work is allowed, saying "Here is where you can paint/draw. Look! You can make it big!"

## Noticing Each Other

### What children are doing:

Much of ones' play activity is what child development experts call "solitary play," where each child does his own thing. That doesn't mean, however, that they don't notice each other. In fact during the second year of life, babies are very interested in each other. They just don't (yet) know how to play together. But creative art activities can be a way for ones to be alongside each other in the same experience, giving them more opportunities to develop those early social skills.

### What caregivers can provide:

- Activities big enough for several ones to engage in at the same time: finger- or sponge-painting on one big piece of paper; applying bits of paper scraps, stickers, or other small bits to a large sheet of sticky paper (like Contac™) attached to the wall sticky side out.

### What caregivers can say and do:

- Prevent conflicts by making sure there are enough materials and tools to go around.
- Comment to a child about what another child is doing as well as what he or she is doing ("You're squeezing your play dough. Look at Charlie. He's squeezing his play dough, too.")

## Keep in mind

All materials that are used with ones need to be completely non-toxic and safe in case a child swallows some. For that reason, many providers use food, such as pudding or applesauce, for creative sensory exploration. This runs the risk of confusing children, however, if they are faced with figuring out when they can play with their food and when they can't. If the longer-term goal is for children to know the difference, it may be less confusing to use substances that are non-toxic but not especially tasty for creative play.

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#### Topic: Arts and Creativity

##### Introduction:

When you think about art with two-year-olds (“twos”), think more along the lines of Jackson Pollock, splashing paints on giant canvasses, than Georges Seurat, painstakingly making scenes out of tiny dots. Twos are energetic and love being silly together. Their emotions are as big as their energy and can change with no notice. They want to be in charge but are unpredictable. Twos learn by doing. They’re also learning to communicate with words, although they often lose patience with it. In this Nurturing Learning, you’ll explore how to create meaningful art experiences that fit well in the busy world of twos.

#### Moving With Their Whole Bodies

##### What children are doing:

Twos are all about movement! They run, jump, dance, and climb and seem determined to figure out on their own what their bodies are capable of doing. Incorporating creative art experiences into the active lives of twos means working with their high energy rather than against it.

##### What caregivers can provide:

- Stand-up art: Whatever medium adults are offering twos (paint, play dough, collage), place it so that children can stand while working with it.
- Outside painting: Take painting outside to give children more room to move (plus, it’s easier to clean up!). Place a long length of butcher paper on a fence or wall and offer containers of paint and brushes on a nearby table (the paints will get mixed but the children don’t usually care).
- Painting with feet: Another experience that works best outside is to invite twos to step in paint with their bare feet and make footprints on a large piece of paper laid on the ground.

##### What caregivers can say and do:

- Help twos express themselves verbally by commenting on what they are doing, echoing back the words they say and inviting them to say more.
- When there is a conflict between twos (a common occurrence), don’t just tell them to “use your words,” give them words to say to each other and stay nearby to provide gentle support in listening to each other, reading each other’s faces, and figuring out a compromise.





- Different painting tools and printing objects: While keeping the medium the same, introducing a new tool/object to use with it, in addition to those the children have used before, invites them to experiment with both and notice the differences in the outcome.
- Opportunities to work in smaller spaces: While offering large spaces invites the large movements twos love so much, occasionally inviting them to work in a smaller space ( painting on an easel, painting or printing in a pizza box, using play dough on a tray) gives them practice with more controlled movements.

What caregivers can say and do:

- Help draw twos' attention to the marks and designs on the paper ("I see you made a long line with your paint brush").
- Invite twos to experiment ("What else could you use to make a design?").

## Gaining Muscle Control

What children are doing:

Twos are gaining more muscle control in their arms, hands, and fingers. As their movements become more controlled, they begin paying more attention to the marks and designs that they are making and less to the sensory part of the experience. In other words, they are becoming more and more interested in what they can make with the marker, paintbrush, play dough, or crayon. Their scribbles are still scribble-y but twos will often stop and look at their scribbles, then experiment with scribbling differently – in a different way or with a different color. When painting, they don't just focus on the movement of their hand and arm, but they pay attention to the design that they have made and experiment with making a different design.

What caregivers can provide:

- Opportunities to practice using the same materials. Don't fall into the trap of thinking that every experience provided for young children has to be new! Twos enjoy using the same art media – paints, crayons, play dough – again and again. It gives them the opportunity to use a familiar material to recreate something they've done before (mastery) and to try something new (innovation).

## Developing a Sense of Self

What children are doing:

Twos are known for their struggle for independence. They are learning who they are as individual persons, separate from others, and part of that learning is insisting on doing things by themselves, their own way. This is a big reason to include lots of open-ended, creative art experiences with twos – they're a perfect fit for little people who want practice making choices and being in charge.

What caregivers can provide:

- Opportunities for individual creation: Although group art creations work well with twos, it's also a good idea to include activities that allow them to work on their own, with no competition for materials and no conflicts of ideas.
- Face/body paint and mirror: The most individualized art of all uses the body as its canvas! Not all twos will want to try, but many will be curious, especially when you provide a mirror. They love looking at themselves and looking at one another! [Caution: Be sure to only use paint specifically created for face painting with children. To be safe, test a small amount before allowing them to apply it to their faces.]

### What caregivers can say and do:

Expect that twos will come and go, change their minds frequently, and decide they don't like something that they did like yesterday. Although they may not really know what they want, they do know that they want to make the decision themselves! The result is often resistance to anything an adult suggests. Rather than insisting that they do an activity, invite them:

- Appeal to their curiosity ("Oh look, Kaitlyn, here's a feather. I wonder if you could paint with it")
- Appeal to their natural desire to help ("Oh no, there's a whole spot here with no green! Who could find some green to put there?")
- Engage their fun side (put on some up-beat music and invite them to dance while they are creating).

## Remembering

### What children are doing:

Although it's true that twos are much more interested in the process of creating with art materials than they are in the finished product, that doesn't mean they don't benefit from having their artwork saved. It can be especially meaningful to twos if their creations are not only displayed but are open for further exploration. Being able to revisit what they've done the day before and then add to or change it can strengthen memory connections and a sense of ownership. It can also give children an opportunity to continue practicing and trying new things with the same materials.

### What caregivers can provide:

- Multiple opportunities to add chalk marks to the sidewalk, paint designs to a large piece of plexiglass, or crayon marks to a large piece of paper taped to the wall.
- Give each child their own glob of play dough in a plastic resealable bag or container that they can open, labeled with their name.

### What caregivers can say and do:

- Write each child's name next to an area that they worked on. Then when they come back to it, comment on the work that they did earlier.
- When a child is done working with the material such as play dough, say "Are you all done? We'll put it away now. You can take it out again later."

## Keep in mind

Art with toddlers and twos is messy! It's worth the time to think of strategies for accommodating their messy creative experiments while also making clean-up easier. Adult t-shirts, slit down the back, with a little Velcro™ at the neck for quick fastening, make great art smocks. Lay a plastic sheet or cut-out bottom of an old kiddie pool on the floor to catch paint drips or play dough crumbs (but be mindful of tripping hazards). Take messy art outside on warm days when washing up can be part of the fun. Give each child a damp sponge and invite them to be part of the clean-up. It won't be perfect but it's still worth doing. These are just a few ideas: look for others online or in art books for very young children.

### BETTER · KID · CARE

#### Topic: Arts and Creativity

##### Introduction

During the preschool years, young children blossom in their ability to experiment with new ideas, including new ways of creating with art materials. Preschoolers gradually develop a sense of ownership and pride in the objects they create. As their minds and bodies develop, their creations become more complex and detailed. As they gradually develop an understanding of representations (that a picture or model can represent a real object), they become more intentional about creating realistic drawings, sculptures, buildings, etc. During this period, children are also growing by leaps and bounds in their understanding of other people. By the end of their preschool years, children are beginning to understand that other people can have different perspectives, opinions, thoughts, and feelings than they do.



##### Creating Representations

###### What children are doing:

As preschoolers gain more practice with creative art and building materials, they become less interested in the material itself and more interested in what they can make with it. Because they are also getting a much better understanding of how a drawing or model can represent a real thing, caregivers see children being more intentional about creating works of art that look like something and paying more attention to details.

###### What caregivers can provide:

- Basic art materials (media, such as paint, and tools, such as scissors) that are available and accessible for children to use every day, enabling children to become very familiar with them. The collection should be well-stocked, in good condition, and organized in a way that encourages children to use them without adult help. Examples of media: markers, water color paint sets, colored chalk/pastels, modeling clay, colored pencil sets (for older preschoolers).
- Examples of paintings, drawings, book illustrations, etc. that depict a wide range of realism in representations.

###### What caregivers can say and do:

- Allow children to save their artwork and continue working on it over time, if they like.
- Encourage more detailed representations by making comments and asking questions that help a child focus on one part of the object they are representing, noting the color, shape, etc.
- Display and talk with children about examples of artists' and illustrators' representations. Ask questions that encourage children to think about different ways of representing objects with various art media (paint, clay, etc.).

## Developing Persistence and Problem-solving Skills

### What children are doing:

As preschoolers become more skilled at working with art materials and more intentional and invested in their creations, you also may see more frustration when they aren't able to create the effect they have in mind. Creating involves a lot of trial and error – or more accurately, disappointment. Children vary in their ability to tolerate situations that don't turn out the way they expected. Some preschoolers are risk-takers and don't seem to mind at all. They just try something else! Other children seem to be born perfectionists and become very upset when they don't succeed the first time. Most children fall someplace in the middle, and need a little support in developing persistence and problem-solving attitudes.

### What caregivers can provide:

- Books with photos of specific objects, animals, etc. that the children are interested in or exploring at the moment.
- Real examples of objects that children are interested in, when possible. Separate the objects from other toys and materials and let children know that they are for observing – for looking at carefully. Drawing a representation of a caterpillar will be more successful and engaging for a child if he or she has a three dimensional caterpillar or two to observe! (By the way, this type of observing and drawing is a key element of scientific investigation.)

### What caregivers can say and do:

- Sometimes children become frustrated or reluctant about getting a representation just right. Instead of creating it for them (which caregivers may be tempted or asked to do), help them figure out how to deal with the situation themselves. For example, if they don't know how to draw something, adults can help them find a picture to refer to. If they can't get a sculpture to stand up, they can be helped to brainstorm a solution to try. But more important than a specific solution to a situation is conveying the message that creating is trial and error and very often it doesn't turn out the way it is hoped. Creating isn't about perfection, it's about trying something new or different, seeing what happens, enjoying when it turns out well and

trying something else when it doesn't. Caregivers can let children know that that is what artists do. Or, better yet, adults can invite a professional artist to come for a visit, or take children to their studios, if possible, and ask the artists about failure.

## Recognizing and Creating Patterns

### What children are doing:

A couple of related concepts that show up more and more in older preschoolers' artwork are design and pattern. These decorative elements are different than representational art: they don't represent something else but are, instead, uses of line, color, and form that are interesting and appealing in themselves. Some elements of design incorporate mathematical concepts that preschoolers can grasp as they get older, such as symmetry (where two sides are mirror images of each other) and repeating patterns.

### What caregivers can provide:

- Stamp set and ink pads: Once children are familiar with these, they often begin spontaneously making repeating patterns.
- Shape stencils, rulers, drafting templates, and other tools that enable children to experiment with line, shape, and form designs. Be sure to include pencils and markers with relatively fine points for older children.
- Paints, large paper, and objects for printing: If children have had plenty of previous experience becoming familiar with these materials, they will eventually start experimenting with designs, symmetry, and patterns.

### What caregivers can say and do:

- Talk with children about repeating patterns and designs in their environment (patterns of colored floor or wall tiles or bricks; patterns or designs on clothing and other fabric).
- Use transition times to play simple verbal games where you chant a pattern ("Blue, blue, green... blue, blue, green...blue, blue, what comes next?"). The repeated rhythm of chanting emphasizes the repeated pattern of the words you say, making it easier for children to catch on.

## Appreciating Art

### What children are doing:

When it comes to artistic expression, older preschoolers not only are developing opinions and feelings about their own creations, but they are beginning to look more closely at and thinking about other children's and adults' artwork. Part of growing in social skills for fours is understanding that someone else's idea is as worthwhile as your own, even if it's different than yours. Understanding that individuals can think and feel differently about what is aesthetically beautiful or interesting, and that those personal preferences should be respected, is very challenging for preschoolers! But with encouragement, adult models, and practice, by the time they head off to kindergarten, they will be familiar with the attitude that "beauty is in the eye of the beholder."

### What caregivers can provide:

- Opportunities to examine a variety of art or illustration styles. The group may do a "study" of several favorite children's book illustrators with distinctive styles (such as Eric Carle, Tana Hoban, Lois Ehlert, Ezra Jack Keats). Copies of individual illustrations/pages can be made available for children to examine closely. A similar study can be done of famous artists with very distinctive styles.
- Set apart an area to display individual children's choices of their favorite creation made that day or week. This encourages children to think in more depth about their own work, learning that evaluating one's own work is part of the creative process. It also demonstrates that other children can also think deeply and have opinions about their work and that those opinions can be very different from each other but they are all valuable.

### What caregivers can say and do:

- Talk with individual children about their own preferences, choices, and feelings during and after the creative process. Ask things like: "What do you think about your painting? What is your favorite part? Is there any part that you wish would have turned out better?"

- Chart children's preferences and record their comments as part of the study of professional artists or illustrators. Talk positively with children about having so many different viewpoints.
- Invite children to offer thoughts about one another's work, asking similar questions: "What do you like about Jenny's sculpture? What does it make you think of?" Emphasize that people don't all have the same thoughts and feelings about the things they like, just like they don't all have the same face. Convey the message that different isn't wrong or bad...it's just different, and that each of them has the freedom to create art that he or she likes, even if someone else doesn't like it.

## Keep in mind

Don't limit creative expression to the art corner. Creativity in general, and artistic creativity specifically, can be integrated throughout the curriculum. The key is for caregivers to recognize opportunities for children's creativity in many different places. Invite children to offer their ideas and skills in decorating, designing, arranging, and so on, to incorporate beauty and visual interest in different parts of the room. Create classroom books using children's illustrations (alphabet or number book, or a book on a topic the children are exploring). Invite children to help design and decorate a puppet theater, a dinosaur cave made from a large box, or traffic signs for use with the trikes outdoors. Suggest to block or Lego™ builders that they draw their design on paper, either before or after building. Ask individual children to draw pictures to represent special days on the month's calendar, such as birthdays, holidays, field trips, or special visitors. Add books with pictures of beautiful and interesting architecture to the block area and support children as they recreate and modify the designs. The possibilities are endless, once adults start looking! And the more opportunities and encouragement children are given to be artistically creative, the more confident, inventive, and skilled they become.



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# Nurturing Learning In One-Year-Olds

## BETTER · KID · CARE

### Topic: Language and Literacy

#### Introduction

Watching language blossom during the second year of a child's life is truly amazing! There are so many remarkable changes between children's first and second birthdays, and the most obvious of all is that they begin talking. As exciting as those first words are, though, they are only a slice of the language gains that one-year-olds (ones) make. In this Nurturing Learning, we'll look at several of the ways ones change and grow in their understanding and use of language.

#### Talking!

##### What children are doing:

Most children begin saying their first recognizable words sometime around their first birthday. For the first few months, they slowly add new words to their vocabulary, words that tend to be most relevant in their day to day experience. Then, sometime in the second half of their second year, it seems like a switch is turned on and they go through a period of rapid word-learning. In fact, it's common for children to learn and use an average of 10-20 new words a week, earning this phase the label "naming explosion!" Most of these new words are labels for objects, and ones show obvious pride when they can say the names for things.

##### What caregivers can provide:

The most important thing that can be provided for ones as they build their budding language skills is lots and lots of spoken language from adults. Other than a talkative caregiver, it's also helpful to provide an environment in which there are plenty of interesting things to talk about with the children.

- Inviting, age-appropriate toys and materials that capture ones' attention.
- Sturdy board books that include familiar objects and actions that they can name and talk about.

- Photos and other child-centered displays on the walls at the children's level (photos of the children's families, among others).
- Repetition of simple rhymes, songs, and finger plays that children can join in.

##### What caregivers can say and do:

Face-to-face talking with toddlers, where the children can clearly hear and see the adult and where the caregiver can provide immediate feedback and encouragement to their speech efforts, is by far the most effective means of helping to support ones' language learning.

- Adults can talk with children during routines, describing what the adult is doing, responding to both the one-year-olds' verbal and their nonverbal attempts to communicate.
- Talk with children while they are playing with toys, interacting with art or sensory materials, climbing on the playground, etc.
- Remember that children always understand far more language than they can produce. Expose them to lots of rich language and conversation so that they can absorb it, understand it, and eventually produce it themselves.



## Learning Conversation Skills

### What children are doing:

Long before they speak their first words, babies become familiar with the back-and-forth nature of conversation. Most parents and caregivers naturally engage with babies in a way that involves turn-taking – the adult speaks, then waits for the baby to do something, and then responds as though the baby answered back (even if all she did was blink!). Now, during children’s second year, they are keen to add their own language to the conversation. Children are often very motivated to communicate, and can become frustrated when adults don’t understand what they are trying to say. But most of the time, they enjoy their newfound ability to use words to interact with their caring adults. The more caregivers engage with them in enjoyable conversation, the more language the one-year-olds hear, the more practice they get, and the more language skills they gain.

### What caregivers can provide:

- Opportunities for relaxed, one-on-one conversation throughout the day.
- Opportunities to share a book with three or fewer children. Looking at a book with one child allows caregivers to notice and respond to the child’s actions and words and to have more of an interactive, conversational experience. With each child that is added to the group, less one-on-one experience can happen.
- Songs or movement activities that involve call-and-response or imitation (the adult does an action and the children copy it).

### What caregivers can say and do:

- Recognize when a toddler is initiating a conversation, even when it’s not verbal (for example, a child holds up his empty cup to the caregiver), and respond in a way that will invite more interaction (“I see your cup, Jack. What do you need?”).
- Pay attention to how much language toward children is directive (telling a child to do or not do something). Try to keep this directional language to a minimum and increase the amount of conversational language.

- Consider teaching young ones some simple sign language to use when they become frustrated with not being understood verbally.

## Becoming Familiar with Books

### What children are doing:

If books have been a regular part of one-year-olds’ experiences, they will gradually change from interacting with books as just another toy to showing more and more interest in the pictures that are inside the book. As they gain experience with shared book reading with adults, they will begin imitating book-reading behavior: turning the pages and holding the book upright. When the same books are made available to them repeatedly, over time they will develop a preference for certain books, and even for particular pages or pictures within a book. As their vocabulary and memory skills grow, they remember words of familiar books and anticipate what’s coming next.

### What caregivers can provide:

- A collection of sturdy, age-appropriate books that ones can have access to throughout the day.
- Time each day for shared book reading with a caregiver or adult volunteer.

### What caregivers can say and do:

- Pay attention to individual children’s preferences for specific books or pictures. Use that knowledge to engage them in conversation.
- Although books can be stored in a basket or on a shelf, ones are very likely to carry books with them to other parts of the room. Expecting ones to keep books in one area of the room will only cause frustration for everyone. Be flexible about where children can look at books on their own and be spontaneous about taking an opportunity to read aloud when a child shows an interest in a particular book.
- Model how to treat books. Talk about taking good care of books and about enjoying reading.

## Drawing Meaning from Pictures

### What children are doing:

By the time children are a year old, they are just beginning to grasp that a photo or illustration of an object represents a real object. They are also trying to make sense of how the representation and the “real thing” are the same and how they are different. And, to make it even more challenging, they are trying to understand the labels used for categories of objects when there are obvious differences among the things that go in that category (dogs can look very different from each other!). There are times when, as a toddler is looking at a picture, adults can almost see the mental wheels turning as the child tries to make the connection between the picture, the real world, and the words used to talk about it.

### What caregivers can provide:

- Photo collections of familiar objects or places, family members (including pets), and events that children have experienced.
- Picture labels on storage containers of toys and materials.
- Books that depict actions, events, or emotions that one-year-olds can recognize and connect to their own experiences.

### What caregivers can say and do:

- Encourage ones to make the connections between picture representations and real life as books and pictures are shared (“That’s the baby’s blanket, isn’t it? Where’s your blanket?”).
- Take photos of the children and the activities they do and create displays or photo albums that caregivers and ones can talk about together.

## Keep in mind

It’s important to remember that every child has his or her own timeline for language learning, for several reasons. Differences in temperament, for example, can affect the way ones may begin using language. The cautious child tends to experiment less with sounds and words, trying fewer variations and preferring to observe and wait until he feels more sure of himself. The risk-taker, on the other hand, experiments with lots of different sounds and words while learning the conventional or correct pronunciation, not really minding that he makes mistakes.

So what’s normal? The range for language learning is wide. For example, the appearance of first words ranges from 8 months to as late as 18 months. Early talkers don’t have any overall advantage, though – they seem to simply be highly motivated to talk, saying words as soon as they learn their meanings. And most late talkers have caught up to their age mates in a year or so. However, late babbling and talking isn’t something to be ignored – it can be an early sign of hearing problems or other developmental delays. So if there is a concern, don’t hesitate to seek a professional opinion. The earlier problems are discovered, the earlier children can receive the support they need.

### BETTER · KID · CARE

## Topic: Language and Literacy

### Introduction

Two-year-olds (twos) are known for their desire to be in charge. At every turn they are expressing their opinions (sometimes loudly!), making choices, and practicing independence. But independence is still new territory and can feel overwhelming to twos at times. They are only beginning to learn language to express their thoughts, feelings, and intentions. Verbal communication between twos needs a lot of support to succeed, especially when there is a conflict of wills (a frequent occurrence in a group of twos). But children at this age are also enjoying language. They love songs, rhymes, and books with fun language. They feel excited and powerful when they've succeeded in using words to connect with a friend or caregiver in a meaningful way.

### Using Their Words

#### What children are doing:

Although two-year-olds differ widely in the rate at which they reach language milestones, in general twos can be heard speaking in increasingly longer and more complex sentences, using a wider variety of words. Of course, their ability to articulate certain language sounds still has a long way to go, so interpreting twos' speech can be challenging. In toddlers' earlier attempts at speaking, adults were the best conversation partners because they could do most of the "heavy lifting" – interpreting what was being said and keeping the conversation going. But as they become more competent and confident, two-year-olds can be found talking more and more to each other. There are still lots of breaks in their communication, though, especially when frustration kicks in.

#### What caregivers can provide:

- Repetitive books, rhymes, songs – anything that encourages twos to use and play with language.

- Books, posters, and/or cards that illustrate different emotional facial expressions. Use these to help give twos new words to understand and talk about their feelings.
- Puppets, dolls, and toys that represent people to encourage twos to incorporate language into their solitary play.

#### What caregivers can say and do:

- When twos say only one or two words to communicate, respond by extending and expanding what they've said to encourage more complex speech. (Child: "Juice." Adult: "You want more juice? Here's more juice in your glass.")
- Give twos words to use during social situations, but only when they clearly aren't able to understand one another and frustration is building. Give just enough help to enable them to continue communicating, if they choose.
- Caregivers can talk while playing alongside twos. They can describe actions or what they are noticing about the materials they are playing with, while being mindful of using rich language: full sentences and words that are a step or two beyond two-year-olds' vocabulary.



## Learning to Love Books

### What children are doing:

Provided that books have been a regular part of their lives so far, twos become even more engaged with the books in their environment. Twos are more likely to make decisions about when, where, and how shared book reading takes place and to comment on the pictures while reading. On their own, two-year-olds show a preference for particular books and intentionally choose books to look at and “read” themselves.

### What caregivers can provide:

- A selection of favorite books that is available and accessible to the children for a significant portion of the day.
- A few relatively quiet places where one or two children can take a book to look at without a lot of interruption.
- Books that illustrate familiar children’s songs, such as “Five Little Monkeys” and “The Wheels on the Bus.”

### What caregivers can say and do:

- Give twos choice in selecting and interacting with books.
- Notice children’s current interests (the first snow of the season, the building construction across the street) and find age-appropriate books on those topics to temporarily add to the environment.
- Invite twos to comment on the illustrations in books. If it’s a very familiar book with a predictable text (such as *Brown Bear, Brown Bear, What Do You See* by Bill Martin, Jr.), encourage children to fill in the blank or predict what will be on the next page.

Periodically ask parents about their child’s favorite book at home. Borrow the book or find a copy to read to the children. The child for whom it is a favorite may be quite possessive about the book. Since everyone will have a chance to share a favorite book, don’t force sharing if the child doesn’t want to. Instead, let each child have the spotlight and encourage him/her to talk about the book to the other children.

## Imitating

### What children are doing:

Imitation is one of the most effective ways to learn new skills and twos are becoming masterful imitators of the adults around them! The language and literacy that is a regular part of adults’ everyday behavior will soon show up in twos’ behavior, too. Caregivers should not be surprised to see twos: imitating the way adults speak to them as they talk to their dolls or stuffed animals; imitating reading as they play with books or other print materials; and imitating writing as they experiment with making marks on paper. Besides being cute, it’s an important part of practicing and learning language and literacy.

### What caregivers can provide:

- A variety of writing tools and surfaces. Include those that are portable (pads of paper and crayons) and larger stationary surfaces (wall-mounted whiteboard/chalkboard, easels). If children have free access to these materials, they will not only use them in creating artwork but will also at times use them to pretend-write, especially if they have frequently seen adults use them in that way.

### What caregivers can say and do:

- Allow children to take books to other parts of the room to incorporate them into their play.
- Play along – if a child is pretending to be an adult, take on the role of a child. It will delight them and make them feel like a powerful, competent user of spoken and written language.
- Use writing tools and surfaces that children are then allowed to use in their play. Be intentional about modeling and talking about reading and writing.

## Understanding Illustrated Stories

### What children are doing:

As twos gain experience with understanding the connection between pictures and real life, they move on to understanding the concept of a sequence of events illustrated by pictures. Cognitively they are beginning to grasp concepts like cause and effect and events in time. Experience with simple storybooks and other depictions of a sequence of events support their learning.

### What caregivers can provide:

- Children's books that depict the sequence of familiar events or experiences, sometimes called "theme books." Everyday home routines are good subjects: bath time, getting dressed, or getting ready for bed. Familiar experiences in the neighborhood or community are also interesting to twos: going to the store or playing in the park or yard, for example.
- A display of pictures that depict a sequence of relevant events in the child care environment. Picture schedules can help children understand the sequence of activities of the day from when they arrive to when they go home. Pictures can also help illustrate the steps in procedures for routines, such as washing hands or brushing teeth.
- Homemade books of photos of a special event that the children experienced in child care. Include photos of all phases, from the very beginning (getting their coats on) to the very end. Put the photos in sequence and then let the children remember and retell the experience over and over.

### What caregivers can say and do:

- Ask twos questions during book reading that tap into their understanding of sequence ("What happens next?") and that make the connection between the story and their own experience ("The boy is playing with the ball in his yard. What do you play with in your yard?").
- Talk with twos about the sequence of events in the day (referring to a picture schedule, if there is one) or as the group is doing an activity or routine together. Use time-order words like "first," "next," and "last."



### **Keep in mind**

Because twos are often so determined and independent, caregivers can inadvertently let directive, controlling language dominate their interactions with the children. And the more a caregiver uses directive language, the more dominant a controlling attitude becomes, even when it's not needed. Caregivers and teachers of twos have to work hard to keep that from happening. That means: 1) giving twos choices and at least a measure of control as often as possible to satisfy their need for independence; and 2) taking advantage of every opportunity to talk with children as they play and go through the normal routines of the day. For example, a mealtime is not just an event to manage, it's an opportunity for conversation. Outdoor play on the playground isn't just a time to keep safety risks minimized, it's a time to talk with children about their play, and even join in (as long as the children are still in charge). Including more positive, conversational talk during the day builds children's language skills and enhances the adult-child relationships, which has the added bonus of increasing children's willingness to follow the adult's lead when it is needed!

### BETTER · KID · CARE

## Topic: Language and Literacy

### Introduction

The ages of three and four are busy times for language and literacy learning! During this relatively short time, children develop their ability to comprehend and tell narratives (i.e. stories), become much more skilled conversationalists, and begin to understand the mechanics of written language. All of these blossoming language and literacy skills are best nurtured when they are embedded in activities and play that reflect children's interests and respect their initiative and curiosity. Preschoolers are eager to learn early reading and writing skills when they are clearly connected to a task that's important to them.

### Building Oral Language Skills

#### What children are doing:

Preschoolers spend lots of time practicing their storytelling and conversation skills. When they describe and explain, they use more and more complex vocabulary and sentence structure. They refine their communication skills during play, when being understood by friends really matters. All of these verbal skills not only help children feel successful in the moment; they also provide a foundation of grammar, vocabulary, and story comprehension that will help later as they learn to read.

#### What caregivers can provide:

- Wordless books: books with illustrations that depict stories children can narrate.
- Photo sequences (in a photo album or displayed on poster board) depicting a class event (field trip), experiment, or project that encourages children to narrate the events from their memories.

#### What caregivers can say and do:

- Encourage conversation between children, especially younger or less talkative children who may tend to only converse with adults. Meal and snack times are excellent opportunities to

encourage conversational skills such as listening and responding to each other.

- After reading a familiar story, ask children to imagine a different ending and encourage them to tell their version. "Telling" can be oral storytelling, dictation that adults record, or illustrations that children draw and use to tell the story aloud.
- Ask children to describe things they've drawn or built ("You've been working on this a long time. Would you tell me about it?"). Ask children to explain how they solved a problem or why they think something happened a certain way. Ask questions that encourage children to elaborate.

### Understanding Symbols

#### What children are doing:

One of the biggest accomplishments during the preschool years is to recognize the connection between words that are spoken and words that are written. It's really quite an amazing leap: recognizing that a word that we say out loud can be represented by symbols on a page. One of the first ways that young preschoolers grasp this type of symbolic thinking is by recognizing familiar brand logos (food packages, restaurants, stores) and signs that include print (stop sign). Although they aren't reading the actual word on the sign or logo, they do recognize that it's a label for a particular thing, and that's the beginning of understanding that printed words have meaning.



## What caregivers can provide:

- Empty /clean food packages from brands familiar to children for dramatic play; donated materials with a brand logo from a local restaurant, store, or business to set up a pretend version for dramatic play; traffic signs for use with the trikes or toy cars.
- Labels on storage containers for toys and materials that children use frequently. Include both a photo/picture of the object that goes inside and the written word so children make the connection between object and symbolic label.

## What caregivers can say and do:

- Point out relevant written labels/symbols that children encounter during the day: the exit sign in the room, the symbol and word that mean play on the CD or DVD player, the stop sign on the nearby street corner.

## Learning about Words and Letters

### What children are doing:

An even bigger leap is to figure out that individual letters stand for the individual sounds that make up words (called the alphabetic principle). That understanding usually isn't grasped until late in the preschool years. But there are many experiences and teaching strategies that can help threes and fours make connections between language sounds and printed words and letters. And the best place to start is with words that are the most relevant to children – their names.

### What caregivers can provide:

- Lots of opportunities for children to see their own written name (labels on their cubbies, on a classroom jobs/chores chart, on a check in/out list by the door).
- Sets of letters that children can manipulate: magnet letters, alphabet puzzles, letter stamps, games that involve spelling words with letter pieces, etc.
- Books that make connecting oral and written words easier: books with predictable or repeating text, books that label objects, "First Reader" books with simple plots and vocabulary.
- Books that focus on the sounds of language: rhyming books, books that "play" with language sounds, etc.

## What caregivers can say and do:

- Incorporate children's written names into activities and routines. Encourage them to notice the differences between how one another's names are written and how they sound. Help children learn the names of each letter in their name.
- Write down things that children say aloud. For example, adults can record on large paper or whiteboard individual children's responses to a question. Children can also describe pictures they've drawn and an adult can record their words below the picture. Adults can reinforce the idea that each written word represents a verbal word by reading aloud what is written.

## Recognizing the Uses of Writing

### What children are doing:

Threes and fours are not only beginning to recognize print in their world but they are also becoming more and more aware of all of the ways that writing can be used to communicate. Writing can be used to give a command, label or describe, tell a story, jog memories, make a request, or give instructions. As children see more uses of writing, they are more motivated to learn how to write for themselves. Initially they use "mock" writing – scribbles that resemble writing – but gradually over the preschool years, their writing attempts incorporate actual letters, then words.

### What caregivers can provide:

- Writing materials accessible to children throughout the day and throughout the room. For example, small containers with a pad of paper and a few pencils or markers can be placed in key locations around the room.
- Clipboards and attached pencils for use in recording information for specific activities (a survey of children's favorite food; a tally of shapes observed during a shape hunt).
- (For older preschoolers) Printed words that are currently relevant to children that they can refer to when writing. These words can be written on cards and placed in a container at a writing center, written on a large piece of paper that children can easily see, or written on cards and taped to a "word wall."

### What caregivers can say and do:

- The most important things adults can say and do are: 1) model everyday writing (write notes, lists, instructions, reminders, etc.) and 2) talk about what is being written and why.
- Encourage children to communicate in writing themselves. Their messages can be dictated to an adult to write initially but it won't take long before they become more independent.
- Encourage children to write their names on their work, even if it's only the first letter.
- Once a few children begin showing an interest in writing, create a writing center – an area that is designated and equipped for writing. Keep it organized and well-stocked. Observe children's interactions with the materials and talk to them about their work; then make modifications to further nurture their developing skills.

## Recognizing the Uses of Reading

### What children are doing:

Threes and fours are also becoming aware of many different reasons for reading. When children are surrounded by many different kinds of text that are embedded in the activities they care about, they will naturally develop a desire to read for themselves.

### What caregivers can provide:

- Different types of books that serve different purposes: storybooks for entertainment, informational books to answer questions, rhyming and alphabet books to learn about letters and words, concept books (*Bread Bread Bread* by Ann Morris) to explore a topic.
- Games, puzzles, and toys that include words (as labels, instructions, etc.). Playing with them shouldn't depend on being able to read, but enough words should be present that children see their purpose.

- Print-based props in pretend play, block play, and outdoor play.
- Printed step-by-step instructions for activities (simple cooking recipes; planting a flower) that combine pictures and words so children can independently "read" them.

### What caregivers can say and do:

- As with writing, the most important things adults can say and do are to model reading in many situations and intentionally talk about what is being read and why.
- When children are curious about a topic and ask fact-based questions, suggest finding the answers together in a book, online, or from some other written source, rather than simply answering with the facts.

## Keep in mind

The process of learning to read and write is actually quite complex, involving many different but related skills, far more than could be described here. Most of these skills will not be learned by children during the preschool years but it is helpful to understand the whole continuum as caregivers provide materials and experiences to support their emergence. There are several books and resources that describe these emerging skills and offer suggestions for supporting them, such as the book *So Much More than the ABCs: The Early Phases of Reading and Writing*, by Judith Schickedanz and Molly Collins (available from National Association for the Education of Young Children).

### Topic: Play and Music

#### Introduction

Play is the central activity of young children. Whether it's an infant playing with her toes or a five-year-old playing superhero, play is the main way that young children explore, interact with, and enjoy the world around them. Play is any self-directed, pleasurable, internally motivated activity that children control. It's where their inborn curiosity and creativity shine and where they can practice problem-solving and persistence. In this Nurturing Learning, we'll look at what that play looks like in one-year-olds and how caregivers can support it.

#### Exploring Through Play

##### What children are doing:

Much of the play of one-year-olds (ones) involves exploring things around them using their senses. They are drawn to toys and materials that they can manipulate – that they can do different things to or that respond in different ways. Ones are learning about cause and effect and are very curious to know “What can I do with this...” and “What happens if I...”

##### What caregivers can provide:

- Toys that are open-ended, that ones can easily use in different ways.
- Toys that respond in different ways to curious ones' actions.

##### What caregivers can say and do:

- Give ones' time and space where they can explore and experiment with toys and materials on their own.
- Follow ones' lead when they invite you to play with them. Don't be too quick to show them what to do or help them. Play is self-motivating and is the best context for young children to practice making decisions and overcoming barriers.



## Using Their Bodies in Active Play

### What children are doing:

One-year-olds not only use their senses to explore through play, they also use their whole bodies. As they gain more and more physical strength and coordination, playing includes climbing, running, pulling, pushing, and even dancing! A big part of playing for ones is enjoying all the different ways their bodies can move and the different things they can do with their bodies..

### What caregivers can provide:

- LOTS of time and space for active play.
- Toys and equipment, both indoors and out, that allow them to use their whole bodies in different ways and to independently practice new physical skills.

### What caregivers can say and do:

- Encourage ones to test out the different things they can do with their bodies. Let them experiment with a bit of risk and challenge; be available to step in but only when they are clearly getting frustrated or are in true danger of hurting themselves.
- Minimize the amount of time that ones are physically limited (in strollers, walkers, highchairs/booster seats, playpens, car seats, or being carried by an adult). They need their whole range of motion to develop strength, balance, and coordination.

## Imitating in Play

### What children are doing:

One-year-olds can be spotted imitating many of the everyday actions they see adults do, from drinking a cup of coffee to talking on the phone to kissing an imaginary “boo-boo.” This is the first hint of pretend play, which will get more and more elaborate through the early childhood years.

### What caregivers can provide:

- Baby dolls and stuffed animals.
- Toy dishes, food, and other common kitchen items.
- Common household items, or toy versions (toy broom, shovel, mirror, comb, hats/scarves, etc.).

### What caregivers can say and do:

- Encourage imitation-based play by commenting on it and extending it (“Is the baby sleepy? Night-night, baby. Does she need a blanket?”).
- Don’t expect ones to engage in pretend play with one another – that kind of coordinated play needs social and communication skills that ones haven’t yet developed. At this age, they can most often be seen playing completely independently or playing next to another child but not with him/her. In fact, ones may try to take each other’s toys, so be sure and have enough on hand that you can keep competition to a minimum.





## Responding to Music

### What children are doing:

Adults don't usually think of music in relationship to play, but one thing they have in common is that both are very interesting and enjoyable to even the youngest children. Science has shown that babies are born with sensitivity to the basic elements of music and process it in the brain in a similar, though much simpler, manner as adults. By the time they reach their first birthday, babies recognize familiar songs and have developed a preference for the kinds of melodies and tempos surrounding them. From the start, babies respond to music by moving, and now, as they learn to stand and walk, they wiggle, stomp, twirl, and dance!

### What caregivers can provide:

- Music with a variety of levels of energy – ones get excited by fast, lively music and can be calmed by slower, more soothing music.
- Favorite children's songs that are simple, repetitive, and fun (and that caregivers don't mind hearing over and over).

### What caregivers can say and do:

- Don't feel limited to children's music; adult music (classical, new age, pop, Latin, etc.) can be just as enjoyable to children and gives them early exposure to a wide range of music styles. When choosing music to play for children, think about the impact that recorded music is likely to have on them, think about how it makes adults feel, and then notice the reactions of each child as they hear it.
- Don't play music in the background – use it intentionally as a primary activity to connect to children and provide enjoyment. In the background, music only serves to increase the general noise level of the environment, which can be annoying or even intolerable for some children with lower thresholds for sensory input.
- Don't limit music to music time. Incorporate singing into interactions with children – sing during routines and transitions, and sing finger play and action songs when interacting with individual children during playtime.

## Keep in mind

Play is the perfect context for children's learning because it connects body, mind, and emotion in young children. It's satisfying and enjoyable, it's physically active, and it's mentally engaging. Watch children as they play and ask: What concepts is he trying to understand? What skills is she practicing? What is so interesting about that toy, material, or activity? Assume that children's play has meaning and purpose, then be curious enough to discover what that meaning and purpose is!

## BETTER · KID · CARE

### Topic: Play and Music

#### Introduction

Play is the central activity of young children. Whether it's an infant playing with her toes or a five-year-old playing superhero, play is the main way that young children explore, interact with, and enjoy the world around them. Play is self-directed, pleasurable, internally motivated activity that children control. It's where their inborn curiosity and creativity shine and where they can practice problem-solving and persistence. In this Nurturing Learning, we'll look at what that play looks like in two-year-olds and how caregivers can support it.

#### Expressing Individuality in Play

##### What children are doing:

Self-directed play is a great place for two-year-olds (twos) to express their individuality and be in charge. They have opinions and preferences (even if they change frequently) and want to make choices. On the other hand, too many choices can be overwhelming. As their attention span increases, twos can become absorbed in play for increasingly longer periods of time, especially when they are fully in charge and the materials are interesting.

##### What caregivers can provide:

- Toys and materials that twos can use in a wide variety of ways.
- Variety among pretend play props: several kinds of hats, pretend food, purses, etc.
- Sets of toys with variety among the pieces: sets of animals or people figurines; table blocks with different colors and shapes; sets of stuffed animals and puppets; several types of tools to use in the sand table/box.

##### What caregivers can say and do:

- Give two-year-olds manageable choices: make a limited number of activities available but make sure that each activity allows children to make choices within that activity.

- Start with few options when introducing a new material or activity, and then, as the children gain familiarity with it, add more pieces, props, or choices to extend their play.

#### Connecting to One Another in Play

##### What children are doing:

As toddlers get older, they become more interested in talking to and playing with other children. But it can still be a tug-of-war between cooperating with each other in play and competing with each other for toys or materials. Conflicts gradually lessen as twos practice their communication and problem-solving skills. The more skilled they become, the more fun they have with each other, which in turn motivates them to become even more skilled.



## What caregivers can provide:

Toys, activities, and equipment that encourage social interactions while still allowing children to have some individual control or ownership.

- A sand/water table big enough for 3-4 children to comfortably play, and plenty of tools for all.
- A pretend play area with several types of props so that 2-4 children can each be doing a different activity while in the same space.
- Side-by-side easels for children to draw or paint on; a long length of butcher paper that allows several children to independently draw/paint while still having the opportunity to interact with each other.

## What caregivers can say and do:

- Observe or play alongside children, commenting on what each is doing in order to help them notice one another and connect in positive ways (“I see you’re making cookies with your play dough, Emma. It looks like Jamal is making a cake. Yummy!”).
- Model, rather than force, the next step for children, from playing next to each other (parallel play) to playing with each other (cooperative play) (“May I have a taste of your cake, Jamal? I made a cup with my play dough. Would you like a drink of my juice?”).

## Imitating in Play

### What children are doing:

Although two-year-olds started imitating adult actions in play when they were younger, now they really get into pretending! They not only imitate Mommy and Daddy, they love to pretend to be dogs and cats, too. Their pretending isn’t usually very elaborate or long-lasting, but it’s very enjoyable and engaging for them and it’s a great context in which to practice language skills, social skills, and problem-solving.

### What caregivers can provide:

- Props that encourage twos to imitate familiar roles or activities.
- Puppets: Adults may have to model how to pretend that a puppet is talking, eating, or doing other simple actions, but once they’ve seen puppets used they will begin to experiment on their own.

## What caregivers can say and do:

- Add new props to children’s pretend play and watch how they change and extend their stories and roles as a result (bandages in the housekeeping area; washcloths and soapy water with the dolls; hard hats and toy tools on the playground).
- Add animal, people, or vehicle toys to the block area to encourage building structures for pretend play.

## Stretching Their Physical Limits in Play

### What children are doing:

Part of two-year-olds’ developing sense of self is testing their physical abilities and expending lots of energy while doing so. They seem to find enjoyment simply in the ability to move! At the same time that they are growing in strength and coordination of the large muscles of their bodies, they are also developing greater control of the smaller movements of their fingers and hands. That means that they want to try many more tasks that involve those muscles: opening and closing lids, operating different fasteners, using keys, pushing buttons, etc. Unfortunately, they can get frustrated fairly quickly when they aren’t successful.

### What caregivers can provide:

- Indoor and outdoor equipment that allows twos to use their whole bodies to climb, jump, crawl, kick, pull/push, etc. (keeping in mind safety regulations and recommendations, of course).
- Add toys, pretend play props, and tools that encourage twos to practice their fine motor control (discarded keyboards, phones, or small appliances for pretend play; cookie cutters, birthday candles and plastic knives with play dough; pretend play clothing with large buttons, zippers, or snaps).

### What caregivers can say and do:

- Scaffold twos’ attempts to accomplish goals that use either their fine motor skills or their large motor skills. In other words, be watchful but don’t step in until they clearly need assistance, and then give just enough assistance and encouragement to help them succeed, without doing too much for them.
- Twos love showing adults what they can do physically! Be responsive – a little attention and acknowledgment of their effort usually is enough to satisfy them.

## Playing with Music

### What children are doing:

When music is incorporated into the daily lives of two-year-olds, it has the potential to enhance learning, moving, pretending, and getting along. Responding to and creating music provides another context in which they can develop preferences, make choices, and express their individuality. But it's also an activity in which they can do something fun together, which helps to strengthen their sense of belonging to a group. More than ever, twos are able to imitate musical behavior – singing, imitating rhythms, pretending to play an instrument or perform with a microphone. They not only remember melodies and words (sometimes getting the words hilariously wrong), but they are also starting to experiment with creating their own melodies and rhythms. And of course they love music that they can dance and move to – it can be just the thing for active twos' bodies when they can't go outside or must wait for the next scheduled activity.

### What caregivers can provide:

- Children's music with actions!
- A music collection that includes both vocal and instrumental music representing a wide variety of musical styles, tempos, and moods.
- Simple rhythm instruments, keyboard, xylophone, and/or other instruments that allow twos to explore tones and rhythms they create themselves.

### What caregivers can say and do:

- Draw children's attention to changes or differences in tones or rhythms they hear or make.
- Collect some favorite songs (preferably with actions) to use with children during transitions, times of waiting, etc.
- Express enjoyment of music! Join children in singing and dancing. Talk about music that adults like; talk about how it makes people feel. Play and experiment with instruments along with the children.

## Keep in mind

Play is the most motivating context for children to develop social understanding and communication skills. Play is enjoyable, so children try harder to work out conflicts and misunderstandings that threaten that enjoyment. But two-year-olds are early in their understanding of how to communicate, negotiate, and compromise. They still seem genuinely puzzled when their use of brute force or yelling doesn't have a positive effect! Play is the context where caregivers can find the best, most frequent opportunities to give them better tools and skills to try. But if adults aren't paying attention to children's play until emotions have erupted, they have missed the opportunity. The best time to coach young children is when they've gotten stuck in their play but aren't yet in emotional overload, and that requires caregivers to be observant during play.



### BETTER · KID · CARE

#### Topic: Play and Music

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##### Experimenting and Inventing Through Play

###### What children are doing:

Play encourages experimentation. There's little fear of what will happen if an idea doesn't work, so preschoolers are more willing to try different ideas. During the preschool years, children are learning a lot about their physical world (how things work) and their social world (how people work). Play provides the perfect place for preschoolers to try out their theories of both as they make observations, make changes, and notice the outcome. When children are given lots of open-ended materials and time to experiment, they can show amazing creativity and inventiveness in combining or using those materials in new ways.

###### What caregivers can provide:

- Loose parts: natural materials (logs, large rocks) and found materials (used tires, cardboard boxes) that children can use outdoors in creative ways.
- Materials and tools for constructing both small and large structures.
- Books that invite creativity and innovation (*Harold and the Purple Crayon*; *Not a Box*; *Beautiful Oops!*).

###### What caregivers can say and do:

- Don't confine children's play with certain materials to one designated area; allowing children to combine different types of materials can foster some very innovative play (for example, children combine large blocks and pretend play props to create a castle scenario and script).
- Ask questions that encourage innovation and creativity: "What else can you do with that?" "Where else could you look for something that might work?" "Is there something else you could try?"
- Fear of failing and a need for perfection tends to come from adults, not from anything inborn in children; be careful not to dampen children's willingness to experiment by modeling negative reactions to adults' own mistakes or unsuccessful attempts.

##### Imagining in Play

###### What children are doing:

Children's imaginations explode during their preschool years, and nowhere are their imaginations more evident than in pretend play. Between their third and fifth birthdays, children's pretending becomes more complex, with more roles, more elaborate storylines, and themes that can go on for days and even weeks! Their scripts often incorporate elements of fear and danger, separation or death, harming and rescuing, and sticking together to conquer challenges. The familiar themes of home and family now share the stage with adventure themes. But dramatic play is not the only place where imaginative story lines are developed. Building materials (Legos™, blocks, etc.), toy vehicles, small animal and people figures, and even tricycles are also used by preschoolers to create elaborate stories.



What caregivers can provide:

- Small figures, toys, and puppets that encourage pretend scenarios and storytelling.
- Children’s books or stories that are fairly easy for children to act out.
- Raw materials (cardboard boxes and tubes, boards, paper) and art materials that children can use to build and decorate set pieces for their pretend play.
- Theme-based pretend play set-ups, based on children’s current interest (veterinarian’s office, pizza restaurant, car maintenance shop).

What caregivers can say and do:

- Ask children to imagine alternative endings for a familiar children’s book.
- Suggest that children act out their favorite stories.
- Encourage children to suggest, find, and create additional props for their dramatic play.
- Now and then, take dramatic play materials outdoors.

**Learning to Play Within Rules**

What children are doing:

As preschoolers’ play becomes more social, children begin to think more about organized play – play that has rules. Sometimes rules are introduced very informally, as a way to clarify the script for everyone (“You guys can’t come over here because there’s a river right there, so you have to stay there and we have to stay over here.”). Rough and tumble play usually

provides an opportunity for children to think about rules that will keep everyone safe, with an adult’s coaching. Preschoolers are also becoming familiar with games with predetermined rules: table games, teacher-lead group games, etc. All of these experiences provide preschoolers with practice in using their developing self-control.

What caregivers can provide:

- Simple, age-appropriate table games.
- Cooperative group games that help children practice simple rules: parachute play, simple ball games, Freeze (children dance during the music, freeze when it stops), etc.

What caregivers can say and do:

- Remember that the ability to inhibit or stop a physical response is just beginning to develop in three-year-olds; the more excited or upset they are, the less able they are to wait their turn or follow other rules that require them to control their impulses.
- Coach children through the process of developing their own rules for play when the need arises. Write down the rules that they decide on so children can refer back to them.

**Representing What They Know in Play**

What children are doing:

As much as adults would like to, they can’t read children’s minds to find out what they are thinking and how they understand the world around them. However, through play, children show their caregivers! In play, children reconstruct what they believe to be true about how things and people work. Through play they deal with the questions that trouble them – the things they want to understand but don’t. Through their play choices, adults can learn what they are interested in and curious about. With careful watching of and listening to children’s play, adults are given an outline for planning a curriculum of meaningful learning experiences.

What caregivers can provide:

- Substantial chunks of time for children’s self-directed play in which they can freely choose among a variety of materials, toys, and equipment.
- Plenty of space and materials to reduce conflicts and frustrations that limit children’s play.

- Opportunities to play outdoors as well as indoors; an ample supply of toys and materials for outdoor play that encourages a variety of play types (dramatic play, play with art materials) and themes.

#### What caregivers can say and do:

- Make time during children's free-play time to intentionally watch, listen, and be curious. Be intentional about noticing each child's play over the course of a week. Record observations of children's play: what their words and actions tell about the knowledge they are constructing about the world; the concepts or questions that are central to their play; and the emotions that they are expressing during play.
- Take photos and videos of children at play; invite them to talk about their play as they see themselves and reflect back on what they were doing.
- Follow the interests of children; when observations of their play tell about an interest or question that children are thinking about, plan experiences that allow them to explore that interest/question in greater depth.
- Invite children to contribute their ideas as future activities and projects are planned.

## Becoming a Musician

### What children are doing:

Enjoying and playing with music moves to whole new levels during the preschool years. Preschoolers develop the ability to repeat patterns of rhythm and remember whole songs. As they develop greater muscle control and coordination, they can better synchronize their body movements to music (marching, dancing, drumming, or clapping to a beat). They can also notice more subtle differences among musical tones and rhythms and like to experiment with creating both. Preschoolers can also be heard singing to themselves, either actual songs or ones they are making up on the spot, purely for the enjoyment of it.

### What caregivers can provide:

- Instruments that produce a variety of tones. Consider introducing actual musical instruments, such as different sizes and kinds of drums, or assembling objects that produce different tones when struck, such as a collection of glasses with different levels of water.
- Rhythm instruments that children can play while singing or listening to music.
- Recorded music with a wide variety of instruments and vocal styles.
- Factual books about musical instruments.

### What caregivers can say and do:

- Encourage children to notice differences in the sounds produced by recorded voices and instruments; encourage them to recreate the sounds they hear.
- Seek out opportunities for children to see musicians (professional or amateur) playing live, either by attending a performance or by inviting a musician to visit.
- Offer children the opportunity to touch, hold, examine, and try to play different instruments, if at all possible.

## Keep in mind

Because play is enjoyable, self-motivated, and very interesting to children, it's the context in which adults see children's highest levels of skill and knowledge. For example, on the playground climber is where caregivers see their best large motor performance. During dramatic play is where adults hear each child's best attempts at communication. Drawing a picture for her mom and writing a note is where caregivers see a child's highest level of fine motor and literacy skills. Because self-directed play is where children use their highest level of knowledge and skill, it's the best context for assessment. Observing and recording what children know and are able to do during play gives the most accurate picture of their level of achievement in every area of development.



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