

Infants & Toddlers Cognitive Development

Supporting Cognitive Development: Environments and Materials

The ways in which you set up your learning environment and materials help set the stage for children's cognitive development. This lesson will highlight environments and materials that promote infants' and toddlers' cognitive development. It will also share information about supporting the needs and backgrounds of all infants and toddlers in your care.

Objectives

- Describe environments and materials that support infants' and toddlers' cognitive development.
- Identify ways learning materials encourage discovery, exploration, experimentation, and problem solving in your classroom.
- Discuss ideas for addressing the needs and backgrounds of all infants and toddlers in your care.



" In order to act as an educator for the child the environment has to be flexible; it must undergo frequent modification by the children and the teachers in order to remain up-to-date and responsive to their needs to be protagonists in constructing their knowledge ." - Lella Gandini, 1998.



The Third Teacher

In Italy, after World War II, a teacher by the name of Loris Malaguzzi and parents in the villages outside Reggio Emilia, which were destroyed by the war, got together to create a new approach for teaching young children. The Reggio Emilia philosophy is based on the principles of respect, responsibility, and community. These principles are developed through exploration and discovery in a supportive and enriching environment created based on

the interests of the children. In Reggio Emilia programs, the environment is known as the third teacher because of its importance to development and learning. The environment should be responsive to the need for teachers and children to create learning together. The classroom environment can help shape a child's identity as a leader in his or her own life and the life of others. According to the philosophy, the child's first teacher is a parent who takes on the role of an active participant in guiding the education of the child. The second teacher is you, the caregiver within the classroom setting. The third teacher, the environment, when appropriately constructed has the ability to guide and facilitate learning and behavior. It is the combination of a child's relationship with the parent, teacher, and environment that best promotes learning.

Infants and toddlers are natural explorers, but there is still a lot you can do to help them learn and grow. This lesson will highlight the significance of creating purposeful environments and choosing materials that facilitate infants' and toddlers' learning and growth. You will learn how to identify what infants and toddlers enjoy exploring and how to meaningfully design your environments and materials to spark exploration. The final lesson in this course will discuss experiences and activities that promote cognitive development.

Environments and Materials that Promote Infants' and Toddlers' Cognitive Development

Infants and toddlers thrive, and cognitive learning explodes, when young children are allowed to explore an environment that is rich in developmentally appropriate materials with teachers who are respectful of their needs and know how to tailor experiences based on individual learning styles. Flexible environments allow teachers to be responsive to the needs and interests of the children, which allows children and caregivers to learn together. How you set up your learning environment for infants and toddlers can make a difference in what and how they develop and learn.

Learning is both individual and social and it takes place within social and cultural contexts. Therefore, you need to make sure your learning environment provides opportunities for infants and toddlers to engage in individual experiences, as well as meaningful interactions with peers and caregivers in your room throughout the day. Consider the different areas in your room. How are these set up? Are there interesting, age appropriate, and fun materials for infants and toddlers to manipulate, explore, and learn from? When thinking about interactions with peers, how are you setting up the environment for these interactions to take place? Do you provide enough materials, such as large blocks or balls for a group of children to manipulate, stack, or push while interacting with you and their peers? Do you provide enough space where children can work together to explore materials? Do you provide cause and effect toys to encourage exploration? Many questions and concerns regarding children's behavior can be answered by looking at the set up of your environment and asking yourself these questions. The solution to unwanted behaviors is often discovered by changing one or more aspects of the environment. The materials and arrangement of a classroom can play a major role in the relationships that form between infants, toddlers, and caregivers.

Infants and toddlers find enjoyment in making their own discoveries and learning how things work. They love to experiment! They want to use materials in many ways and not be limited. It is important that toys and materials meet the children's needs even if they are not necessarily attractive to adults. Consider for example that young children often enjoy a box a particular toy comes in more than the actual toy. Have you thought about why this

is? A box has flaps for opening and closing. A child can put items in and take them out. They can push the box, kick it, carry it, and add a string to it to pull it. Some boxes are big enough to climb into or even stand inside. Every item a child puts in that box will make a different sound when shaken. Different items make it heavier or lighter. A box encourages discovery, exploration, experimentation, and problem solving. It is a great learning tool for such a "simple" item.

When choosing materials keep the following in mind:

- Materials must be intact, usable, and safe always. If batteries in electronic toys have lost their charge, replace them or remove the toy from play.
- Materials can be purchased, borrowed, or donated from a variety of places. Donated or borrowed materials must be approved before use in the classroom. Materials do not have to be purchased from early care and education companies to support learning and play.
- Materials can be homemade or make-it-and-take-it from crafts that are added to the classroom.
- Open-ended materials encourage investigation and group learning. They can be used in a variety of ways for a variety of interests.
- Change materials as the interests of the children change. Simple adaptations may be exchanging wooden blocks for foam blocks and offering new book selections throughout the space. Larger changes can be made by rearranging the layout of the room or adding a new piece of furniture.
- Infants and toddlers with special needs may require modifications to the way experiences are provided or supported and in materials they use. Special needs should not inhibit a child from exploring, problem solving, and experiencing the environment.

Accessibility of Learning Materials

Infants and toddlers learn by doing and materials must be within their reach for them to have appropriate experiences. Many early care and education resources refer to the importance of accessibility of materials within learning environments. Infants and toddlers follow their desire for certain materials and experiences, and if materials are not accessible for much of the day then their needs may go unmet. If this happens frequently and consistently, their learning opportunities are greatly diminished. When you get to know each child you care for well by observing them on a daily basis, your selection of age-appropriate materials and planning of child-directed and adult-guided experiences that encourage discovery, exploration, and problem solving will support their cognitive development.

Accessible materials are:

- Within reach of infants and toddlers, not stored in cabinets or on shelves that are out of reach.

- Available for infants and toddlers to use whenever they want, without having to ask for them.
- Visually accessible and appealing to the children. This means using small, shallow baskets and clear containers on clean and organized shelves.

For materials to be accessible to nonmobile infants, you must frequently and consistently move the infant to a variety of materials and move materials to the infant. While infants may not be able to choose their experiences, moving them around the environment allows them to observe their peers and explore new spaces and items.

When choosing materials for your environment, consider quantity, quality, and availability of items. For example, a basket of eight to ten foam blocks displayed on a shelf may seem limiting, but it is a way to control constant messes from mobile infants who are interested in dumping, while still providing the opportunity for everyone to explore the material. If you notice a group of toddlers working together to build with the blocks, then you can provide a larger container with more blocks to support ongoing learning. It is also important to remember that wait time before, during, and after routines and during transitions is a time when infants and toddlers should have access to materials. Simple changes that help keep wait time to the suggested 3-minute minimum include:

- Displaying a mirror or pictures near the changing table for children to interact with during diaper changes.
- Offering a basket of books near the classroom exit so that infants and toddlers can read independently or with an adult while waiting to transition outdoors.
- Providing clean manipulatives on a tray while meals are being prepared.

Your attention to what infants and toddlers need developmentally and what they are interested in motivates their desire to learn, which in turn inspires you to continue to adapt and change to support who they are today and shape who they will be tomorrow.

Environments and Materials that Address the Needs of All Learners

There are many things you can do in your learning environment to help all infants and toddlers meet important learning goals. As highlighted above, the first and most important step is to gather information about the children in your care. You will need to know what infants and toddlers are able to do well and what seems to be challenging. Gathering information will help you know the skills and strategies that are likely to help each child in your care. Universal Design for Learning (CAST, 2011) is one strategy you can use. UDL helps all people learn and be successful in their environments. There are examples of universal design all around us: audio books, curb cutouts for strollers and wheelchairs, keyless entry on cars, and electric can openers. Many of these tools were developed for people with disabilities, but they make life easier for all of us. Using the concept of UDL, some examples of what caregivers can do in their classrooms to support infants and toddlers with special learning needs are: using a simple picture schedule, adapting seating arrangements, or using adaptive toys and eating utensils. For additional examples demonstrating the use of UDL, please refer to Lesson Five in this course, Supporting Cognitive Development: Experiences and Activities.

Reflecting on Your Own Practices

It is important to recognize the messages you send in your classroom. Sometimes biases sneak into our environments, materials, or interactions. Awareness of your own bias is an important step in supporting development. Think about which of the following biases might be in your own classroom:

- **Biased language.** Language can send stereotypical gender messages. Adults might call infants and toddlers "baby girl," "big boy," or "cutie" rather than their given names. Staff might encourage girls to "be careful" while saying "boys will be boys." To fight this bias, staff could encourage peaceful solutions for all children (avoid directions like not hitting girls or not hitting kids with glasses). Be sure to comment equally on girls' and boys' appearances and accomplishments.
- **Stereotypical play opportunities and materials.** Infants and toddlers are often encouraged to play in certain ways (e.g., girls with dolls and boys with trucks). Make sure boys and girls get equal access and encouragement for playing with balls, blocks, music, art, active play, and messy play. Comment on the child's action with a material rather than your personal inferences or cultural expectations.
- **Biased materials.** Posters and materials for the classroom may present stereotypical images (e.g., Native Americans in war paint, an all-male construction crew). Make sure the images in your classroom show men and women equally in a variety of professions. Make sure drawings or photos of people with disabilities are respectful images. Include books that show different ethnic backgrounds, social classes, and family structures.

There are many ways you can enhance the curriculum to improve children's understanding and acceptance of culture. The following are some examples (Derman-Sparks & Edwards, 2010):

- **Classroom props or materials:** Include props from a variety of cultures. Books, furniture, dolls, dress up clothes, or musical instruments can all reflect experiences from around the world. Art materials should include a range of materials for representing skin tones and various artistic styles, fabrics of various patterns, and books about art around the world.
- **Bulletin boards and displays:** This space can be used to reflect and respect family traditions. Ask families to bring in pictures or other items for the board.
- **Class books or biographies:** Books about the infants and toddlers in the class document the real experiences of children and families. Talk to infants and toddlers about their lives and their families and incorporate those in drawings, stories, or songs throughout your day.
- **Family stories:** Provide families with materials and instructions for creating a Family Book. Families and children can work together to talk about and record their family history and daily

life. This can be a great way to introduce children and families to one another.

- **Storytelling:** Encourage grandparents or community elders to share stories of their early childhoods with the class or group. These can be audio-recorded or transcribed to create keepsake books for the class.
- **Messages from home:** Using a tape-recorder, encourage family members to record a brief message in their home language. This can be played for an infant or toddler when he or she is upset or homesick.
- **Music:** Include music tapes or CDs and songs from different cultures during music time or story time.
- **Collaborative work:** When appropriate, encourage children to work together in groups. This may minimize the pressure on a child who is learning English. It also exposes children to a variety of ideas and encourages creativity.
- **Snacks and meals:** Invite families to share a traditional meal or snack with the children.



See

The following videos demonstrate how important environments and materials are when it comes to supporting cognitive development.



Do

There are many ways teachers can promote exploration and problem solving through the materials they provide within the environment. Below is a list of ideas to keep in mind when choosing materials for cognitive development.

- **Ensure that materials are safe.** Choking and falling are primary concerns for infants and toddlers, and toys and materials need to be safe. When evaluating your materials, watch out for sharp edges or projections, as well as chipping paint. Select items that are nontoxic.
- **Select materials that are easy for infants and toddlers to handle on their own.** Young children learn by manipulating items by themselves; however, be ready to assist them if needed.
- **Select materials that support cognitive development for each age group served.** Use developmental milestone information to make choices that support cognitive development. Understand that materials may serve a different learning purpose for different age groups.
- **Choose items that are used in homes** (e.g., kitchen spatulas, serrated spoons, strainers, wooden spoons, plastic bowls, shoe boxes, dish towels). This links home and child care experiences in the eyes of the child and shows families that learning materials are often at

their fingertips and inexpensive. A lot of these materials are also open-ended and therefore, appropriate for children at different ages and developmental stages.

- **Examine each item and evaluate how it promotes child development.** Does it support cause and effect actions? Does it utilize fine motor skills? Does it teach infants and toddlers about spatial relationships? Does it help them practice problem-solving skills? Most materials should be applicable to multiple of these inquiries.
- **Include materials that support each child's interest and skill level.** For example, if you have a few pre-toddlers who love soft toys that squeak, make sure you have several bins of different toys that squeak available for them to explore.
- **Provide exact duplicates and triplicates (same color, size, function) of the same item.** This allows more than one infant or toddler to play and learn at the same time and supports social-emotional growth and development.
- **Choose materials that honor diversity.** Materials should be representative of children and families who attend the program and the community and should promote positive portrayal of all persons. A variety of materials should include people of different genders, roles, and occupations (female firefighter, male caring for a young child), ages, ethnicities, and ability levels (person wearing glasses, person using an assistive device like a walker or a wheelchair).
- **Offer materials that include a variety of textures, skills, colors, sizes, shapes, and functions.** Items can be made of wood, metal, plastic, cloth, vinyl; be smooth, bumpy, rough, soft, and hard. Neutral and natural-colored items are pleasing to infants and toddlers; bright colors do not make an item better. Most infants are attracted to materials of high contrast such as black and white pictures of simple images or design.



Explore

Using the information that you have learned in other lessons in this course, complete the *Learning Materials* activity. Write your responses and share them with your administrator, trainer, or coach.

It is important to offer learning experiences and activities that are appropriate, engaging and supportive of children's learning and development across various developmental domains including cognitive, social-emotional, physical, language and literacy, and creative development. Staff working toward their CDA credential should use the *CDA Science/Sensory Activity Plan* handout to develop a science/sensory learning experience from your curriculum (or a new activity you plan on implementing).



Learning Materials for Cognitive Development

Describe how the following learning materials promote cognitive development



CDA Science/Sensory Activity Plan

CDA Candidates complete this activity for the CDA Professional Portfolio



Providing learning materials that support the interests and developmental needs of infants and toddlers is an essential part of your job. Reflecting on why infants and toddlers do or do not choose certain learning materials can help you adapt your classroom environment to support their individual needs. Download and complete the *Learning Materials and Environment Reflective Exercise*. Write your responses and share them with an administrator, trainer, or coach.



Learning Materials and Environment Reflective Exercise

Think about how learning materials spark interest



Required: Complete and review this document with your trainer, supervisor, or administrator

GLOSSARY

Bias:

A preference or prejudice; a one-sided way of thinking

Cause and effect:

Making things happen and understanding the causes of some events. For example, shaking a rattle to make the sound continue, dropping objects from different heights and positions, pulling a string attached to a toy to bring it closer

Developmentally appropriate materials:

Materials that match the way children develop and learn

Manipulatives:

An item that can be explored with one's hands

Problem solving:

Understanding how to use one's self or objects to attain a goal. For example, twisting a shape until it fits into a hole in a container, moving around to the side of the aquarium to see the fish better, using a spoon or fork, using a cup to roll out clay

**Demonstrate**

Q1 True or false? The way you set up the learning environment for infants and toddlers affects their cognitive development. *

- True
- False

Q2 Wait time before, during, and after routines and during transitions should be kept to a minimum. Which of the following is the suggested wait time for infants and toddlers? *

- 10 minutes
- 15 minutes
- 5 minutes
- 3 minutes or less

Q3 Accessible materials are defined as: *

- Materials infants and toddlers must ask to play with
- Materials stored with easy access for teachers
- Materials designed for infants and toddlers with disabilities
- Materials infants and toddlers can reach and use whenever they would like to