



Your early learning guide for infants, toddlers and three-year-olds

facilitator guide

# Module 5: Cognitive Development

## **Competency-Based Learning Objectives**

By the end of this module, successful participants will be able to:

- Describe Piaget’s sensorimotor stage of cognitive development
- Create a list of 4-5 engaging materials to promote exploration for infants, toddlers and three-year-olds
- Develop an open-ended activity to promote problem-solving skills
- List 3-4 ways to promote and support pretend play
- Create an inclusion strategy based on a scenario

## **Description of Target Audience**

Early child care and education practitioners and administrators

## **Training Methodologies/ Strategies Utilized**

**Presentation with content and lecture** - Participants will view a PowerPoint (PPT) presentation with illustrations and key points. Trainer will lecture on content, providing open floor for comments and questions.

**Handouts** – Participants will receive a packet that includes:

- Participant Guide
- Conservation Chart
- Cognitive Terms – Matching Activity

**Small Group Discussion** - Discuss prompts in small groups

**Question and Answers** - Time will be reserved at the end of the presentation for questions and reactions

## **Sequence of Training**

<b>Content</b>	<b>Methods / Activities</b>	<b>Time Allotment</b>
Introduction of facilitator and topic	Agenda overview and introduce Participant Guide	5 min

Responsive Caregiving	PPT and participant responses	5
Piaget	PPT and individual activity	10
Exploration and Discovery	PPT and small group activity	15
Problem-Solving	PPT and small group activity	20
Memory	PPT and participant responses	10
Imitation and Make Believe	PPT and small group activity	10
Inclusion	PPT and scenario activity	10
Cognitive Terms	Matching Activity	15
Conclusion and Q&A	Action Plan	5
<b>Total Length</b>		<b>1.75 hours</b>

## Slide 1: Welcome. Introduce the workshop.

I would like to welcome all of you to **Cognitive Development**. My goal today is to give you an overview of how infants and toddlers develop thinking, reasoning, and understanding. We will also discuss the importance of responsive caregiving and the environment, caring for children with special needs, and best practices for high-quality programs.

### Introduce yourself

Name, position, experience with Little Texans, Big Futures

### Determine the audience

Ask participants about their role with young children. With what age group do they work? Do they work in centers, homes, or public schools? How long have they been working with young children?

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TRAINER TIP:

Taking a few minutes to find out who your audience is at the beginning of the workshop allows for immediate engagement and helps you to personalize aspects of the training. For example, if there is a highly experienced infant teacher, you can solicit examples and responses from her as you move through the material.

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Review any “housekeeping logistics” such as location of bathroom, any planned breaks, ending time, etc.

## Slide 2: Agenda

Cognitive development includes four components that describe how young children develop and demonstrate abilities in: exploring the world around them; solving problems; remembering and retaining information; and pretending and using their imagination. Positive early experiences that support cognitive development contribute to lifelong traits, such as curiosity, persistence, and independence.

During today’s session we will discuss the important role that Responsive Caregiving plays in all aspects of development, including cognitive development. We will provide an overview of Jean Piaget’s theory of Cognitive Development and how it provides a basis for the intense curiosity that drives infants and toddlers to explore and discover the world around them. We will consider how problem solving skills are developed and what the caregiver can do to support this development. We will examine the impressive memory of young children and the process by which the memory works. We will talk about the role that imitation and make believe play have in contributing to cognitive development. Finally, we will examine ways that our programs can be inclusive of children with cognitive delays and special needs.

You each have a **Participant Guide**. As we go through the material today, there are opportunities to take notes, add information and extend your learning.

## Slide 3: Objectives

The objectives for today’s session are in your guide. After completing this training, you will be able to:

- Describe Piaget’s sensorimotor stage of cognitive development
- Create a list of 4-5 engaging materials to promote exploration for infants, toddlers and three-year-olds
- Develop an open-ended activity to promote problem-solving skills
- List 3-4 ways to promote and support pretend play
- Create an inclusion strategy based on a scenario

## Slide 4: Responsive Caregiving

An interactive and responsive relationship with a loving and attentive caregiver is crucial to cognitive development. Responsive caregivers are attentive to a child's needs and respond quickly and consistently to meet those needs. This cycle of responsiveness assures the child that he or she is safe and cared for.

When the child's needs are met and they have secure attachment to a caregiver, they are free to focus on exploring the environment. As we will discover today, exploration is a key element of cognitive development.

## Slide 5: Piaget's Theory of Cognitive Development

According to Piaget, cognitive development passes through four stages. The first two stages are represented in the chart on this slide. Like many of us, Jean Piaget hadn't planned on a career working with children. He received his doctorate in biology, but immediately turned to psychology. Piaget's work centered on the nature and beginning of knowledge. While others asked **what** children know or **when** they know it, Piaget asked **how** children arrive at what they know. While working on a project to standardize intelligence tests, he began to notice that children gave the same types of wrong answers at certain ages. He wondered what thought processes they were using – the question that drove his research for the next 60 years.

Piaget's work has been a primary influence in preschool programs in the United States since the 1970's. He believed that children's interactions with their environment are what create learning. Rather than learning from instruction, children learn through construction, learning best when they are actually doing the work themselves and creating their own understanding instead of being given explanations by adults. The best strategy for early childhood is to keep children curious, make them wonder, and offer them real problem-solving challenges, rather than give them information. A teacher is someone who nurtures inquiry and supports the children's own search for answers, not someone that just shares information.

Piaget stressed the importance of play as an avenue for learning. When children play, they make sense of the objects and activities around them. Through imitation, they begin to understand how things work and what things are for. Play is a safe place for trial and error. As we discuss the components of cognitive development today, we will revisit Piaget's theory and apply the principles to promote cognitive development

## Slide 6: Piaget's Theory of Cognitive Development

Each child develops at their own pace, so the ages are meant to reflect general timeframes. In the first stage of development, the sensorimotor stage, infants learn through the use of their five senses and by moving around the environment (sensor = senses, motor = movement). Infants use their motor development and senses to explore and discover the world around them.

## Slide 7: Cognitive Development

Take out your Participant Guide and take a few minutes to describe Piaget's sensorimotor stage of cognitive development.

## Slide 8: Piaget's Theory of Cognitive Development

After the sensorimotor stage, children's cognitive development enters the preoperational stage, which can last until they are 7 years old. During this stage, children's thinking is dramatically different than the way adults think. Children are egocentric, can focus only on one characteristic of a thing at a time, gather information from what they experience rather than what they are told, and over generalize from their experiences.

## Slide 9: Exploration and Discovery

Exploration and Discovery includes indicators of development for how young children explore their environment and demonstrate the building blocks of inquiry and curiosity through playing with cause and effect relationships and understanding patterns. During the sensorimotor stage, infants and toddlers are using their senses to explore, gradually learning about the world.

The indicators for this component are:

- Pays attention and exhibits curiosity in people and objects
- Uses senses to explore people, objects, and the environment
- Shows interest in colors, shapes, patterns, and pictures
- Makes things happen and watches for results and repeats actions

Naturally curious about everything, infants and toddlers are little scientists, adapting to their behavior as they take in new information.

## Slide 10: Object Permanence

An important example of this type of adaptation is **object permanence**. Object Permanence is when infants begin to understand that objects continue to exist- they are permanent- even when they are no longer visible or otherwise detectable to the senses. It is the infant's ability to hold the concept or idea of an object in his/her mind. This is the foundation of thinking. Once a child can begin to conceptualize an object in his/her mind, they can then begin to formulate other thoughts and skills around that object. Playing peek-a-boo with a caregiver fosters the development of object permanence.

## Slide 11: Exploration and Discovery

Playing with toys helps young children explore and learn about the properties of objects, such as how they look, feel, sound, taste, and smell. They discover how objects respond to their actions, such as throwing, dropping, rolling, and squeezing.

### 0-8 Months

- Reach to touch objects
- Put objects in their mouth to touch and taste
- Turn toys over and over to explore, bang toys
- Hit or kick toys to make them move, over and over

## Slide 12: Exploration and Discovery

### 8-18 Months

- Look at books
- Enjoy toys/objects that make sounds, such as drums or bells
- Look closely at small objects, examining the detail
- Stack blocks or objects
- Manipulate toys or objects repeatedly

## Slide 13: Exploration and Discovery

### 18-36 Months

- Express interest in animals and insects
- Examine rocks, sticks, and outdoor objects
- Pour, scoop, and explore sand and water
- Match colors and shapes, sort like objects
- Push/pull riding toys

## Slide 14: Exploration and Discovery

### 36-48 Months

- Talk about and ask about objects in nature
- Notice and discuss changes in weather
- Name colors and shapes
- Copy simple patterns
- Experiment with different objects during play to compare their effects
- Repeat actions to improve results

## Slide 15: Caregiver Responses

At each of these ages, caregivers provide the interactions and environment that encourages exploration and promotes cognitive development. Responsive caregivers carefully observe the child as they explore toys and objects, noticing which objects the child finds most interesting, how

they are using the object and when an object is no longer engaging and should be replaced. The caregiver provides an inviting and engaging environment by providing a variety of toys and 'real' objects, rotating materials often, and allowing the child to explore uninterrupted.

For older toddlers, caregivers should provide materials for art, such as paints to mix, clay to mold, and paper to tear, every day and allow the children to explore the materials as they choose, rather than producing a craft or product. Sensory activities, such as sand and water play should also be available, along with a variety of cups, scoops, funnels, sifters, etc.

Children of all ages, including infants, should go outside every day. The outdoor learning environment should be as enriched and engaging as the indoor classroom. Play alongside children as they explore the outdoors, encouraging curiosity and discovering answers together. Bring books, blocks, push/pull toys, and dramatic play materials outside for a new way to explore everyday materials.

## Slide 16: Exploration

**Activity 1 – Create a list of 4-5 materials that would promote exploration for infants, toddlers and three-year-olds.**

## Slide 17: Exploration

Briefly go over examples and ask for volunteers to share.

## Slide 18: Problem Solving

This component includes indicators related to young children's use of imagination and creativity in approaching problems and tasks. Young children use purposeful actions to accomplish tasks and figure things out, begin to understand the concepts of numbers and counting and apply their skills and knowledge to their daily lives. For example, putting puzzles together requires children to search for a specific shape or piece and fit it in by turning or twisting.

Children have a natural sensitivity to numbers and counting even before they know the words for these concepts. Infants begin noticing changes in amount, such as the difference between three toys and one toy. Between 2-4 years, children begin to demonstrate knowledge of one-to-one correspondence, which is the understanding that when you count in order, each number goes with one object. Problem solving also includes matching paired objects, sorting 'like' objects, and classifying objects.

Indicators:

- Experiments with different uses for objects
- Shows imagination, creativity, and uses a variety of strategies to solve problems
- Applies knowledge to new situations
- Begins to develop interests and skills related to numbers and counting

## Slide 19: Preoperational Stage

Let's take a minute to revisit Piaget's stages of cognitive development. During the preoperational stage, toddlers and three-year-olds rely on their own experiences and observations to understand how the world works. They are less inclined to consider an explanation or lesson. They rarely change their idea about how something works until they have seen for themselves that their idea needs changing. This is why young children become far more effective problem-solvers if they are allowed to solve the problem themselves with support from a caregiver.

Because preoperational thinkers believe what they see, they do not yet have a good understanding of qualities of objects; for example, they confuse 'heavy' with 'large'. If they are shown a beach ball and a baseball, they will assume that the beach ball is heavier and not change this assumption until they are given an opportunity to lift both objects.

Because children are dependent on their own experiences, they tend to over generalize – or base a general belief on a single experience. It is only through gaining more experiences that these false beliefs can be replaced with new information. Conservation, the idea that certain characteristics remain the same even though their outward appearance changes, is an example of a concept that is almost impossible for a child in the preoperational stage to understand until they have had many different opportunities to experiment with quantities and characteristics.

## Slide 20: Conservation

This chart provides several examples of Conservation tasks that children in the preoperational stage would not be able to solve correctly.

The first example, continuous quantity, illustrates how a child would predict that a glass that is taller holds more liquid. Even if the child saw that two glasses of the same size held equal amounts of liquid and that the contents of one was simply poured into a taller, thinner glass.

When a toddler is playing at the water table, or exploring the sand table, or molding clay, or working with manipulatives, or pushing cars down a ramp, they are learning to apply conservation to real-world situations. This is the only way that they can master these concepts, by experiencing them.

Point out that this chart is a handout for them to keep.

## Slide 21: Caregiver Responses

So what can the caregiver do to help promote problem-solving skills? It always comes back to the environment that the caregiver provides and the interactions between the caregiver and child. To support cognitive development in preoperational children, caregivers can provide a very thoughtfully planned learning environment with engaging and interesting materials, provide novel and real-world experiences, plan open-ended activities and ask open-ended questions.

When children are interested and involved, they need caregivers and teachers who respect their attention to their work. Giving a child a little more time while others clean up can be a way of saying, “I see that you are very involved with your work, and that is important”. Allowing places where their ongoing work can be left until they are ready to finish is another way to honor that their play is an important part of cognitive development, and not just entertainment until the next transition. Providing large blocks of free-choice play time throughout the day gives toddlers and three-year-olds the opportunity to move past exploration and into problem-solving. If a few children are becoming restless or disinterested, create a small group time, rather than calling everyone away from their work and to the carpet.

Provide real-world experiences and materials. Cooking activities, class pets or insects, or a school garden are great ways to bring real world experiences to children without leaving the building. Watching a construction site across the street can bring sand and water play into a new learning experience.

Plan open-ended activities for children. Open-ended activities do not have predetermined result or product, even for the teacher; for example, providing art materials for open exploration creates opportunities for children to experiment and problem-solve. Asking open-ended questions like, “how do you think that happened?” promotes thinking and validates ideas. Similar to the open-ended activity, the caregiver doesn’t know what the answer will be. Open-ended questions have many possible answers.

Open-ended questions allow for more meaningful interactions and give children an opportunity to express their feelings and perspectives. Teachers can prompt critical thinking and encourage discussion with these types of questions. As children compose answers, they organize their thoughts to form a response. Open-ended questions also provide teachers with valuable information about what a child is thinking or feeling.

## Slide 22: Sample: Caregiver Responses - Activity 2

Here’s an example of an open-ended activity. Refer participants to the ITELG book and explain that with this sample activity, I’ve chosen the activity: **Filling/Dumping. I looked at the 4 domains to determine which would be appropriate for a filling and dumping activity. I selected Cognitive Development.** Next, consider the four components under that domain. Which of the four components would be appropriate for this activity? The component I chose is: **Problem-Solving for older infants and toddlers.** Then, you will look at the indicators under that component and think about what skills do you want the child to learn from this activity. **I chose the indicator/objective: Experiments with different uses for objects.** In addition, as you are doing the activity, keep in mind that some of the objectives may overlap. For example, as the child is filling and dumping, he may begin stacking the blocks or counting the blocks (which is one of the other objectives). Remember too, that you will want to follow the child’s lead in the activity. I’ve described specifically how this activity will look in the classroom, the materials to use and an open-ended question. Remind the participants that they are welcome to choose any domain and can use their book for ideas for creating their open-ended activity. \*Note, please remember to

incorporate age appropriate materials. The pegs and pegboards and the Bug Jug Fill and Spill are age appropriate for older infants and toddlers.

## Slide 23: Caregiver Responses

**Activity 2 –Take a few minutes to work in a small group and brainstorm an open-ended activity. Create a materials list, simple outline, and a few open-ended questions that you could use during the activity to promote problem-solving.**

## Slide 24: Video

In this video, the teacher is helping the children think critically about why one car doesn't go as fast down the ramp as the other. Listen to her questions and observe her techniques for helping the children move from over-generalizing to problem-solving.

## Slide 25: Memory

The third component of cognitive development is memory. Memory includes indicators related to how infants and toddlers store and use information. In this component, young children anticipate routines, remember familiar people, and use their memory to inform their daily lives.

Indicators:

- Shows ability to acquire and process new information
- Recognizes familiar people, places, and things
- Recalls and uses information in new situations
- Searches for missing or hidden objects

## Slide 26: Information Processing

Information Processing describes the way in which we remember and retain information. A memory begins with a **sensory memory**, when a stimulus is noticed, and then briefly available for further processing or storing. Most of what hits the sensory memory quickly disappears without being stored; for example, if you are listening for your name to be called in a waiting room and another name is called, it is briefly stored in your sensory memory, determined to be unimportant, and forgotten.

Information determined to be important moves from the sensory memory into **short term memory**. Here, limited amounts of information are temporarily held for use in the current activity. Short term memory is sometimes called **working memory** because it is where information that you are currently using is stored.

To be remembered for any length of time, information must be moved from short-term memory into **long-term memory**. Information that has been fully explored and processed is stored relatively permanently in long-term memory. In order to move information into long-term memory, the information must be rehearsed and repeated.

## Slide 27: Caregiver Responses

To help children remember information, caregivers can use some of the same concepts of labeling and repetition that they use to promote language development. Engaging in face-to-face play with infants, using their name frequently, and naming objects help infants to remember important information through repetition.

Organizing materials and keeping items in consistent locations help children to remember where things go and how to find a favorite toy.

Recognize older infants' and toddlers' favorite books and read with them over and over again. Sing favorite songs again and again. Ask children for book and song suggestions, "What would you like to sing?" to give them an opportunity to retrieve the memory of their favorite.

Play memory games, such as naming the objects in a picture in a book or identifying friends and family members in photographs.

Ask three-year-olds simple questions about past experiences and respond with interest to their answers.

## Slide 28: Imitation and Make Believe

Imitation and make believe includes indicators related to young children's use of their imagination and play to imitate actions and experiment with different roles and ideas. Young children begin to learn new play actions through imitation, such as copying a caregiver when she makes a 'moo' noise when holding a toy cow. As their imagination develops, toddlers begin to put pretend actions together in sequences to act out scenarios, such as taking care of a baby, making dinner, or going to the doctor's office.

Indicators:

- Uses objects in new ways or in pretend play
- Uses imitation in pretend play to express creativity and imagination

## Slide 29: Imitation and Make Believe

Piaget believed that, through pretending, young children practice and strengthen newly acquired ideas about the world.

Very young infants, even newborns, can imitate certain actions, such as sticking out the tongue or opening the mouth. Infants as young as 6 months display **differed imitation**, the ability to imitate a new act after a delay, which requires memory and imitation. Their first pretend acts imitate adults' actions and are not yet flexible.

In early pretending, toddlers use only realistic objects, for example, a toy telephone to talk into or a toy cup for drinking. Children younger than 2, for example, will pretend to drink from a cup, but refuse to pretend a cup is a hat. They have trouble using an object that already has an obvious use as a symbol of another object. Their pretend play is self-centered. They pretend to feed themselves or talk on the phone themselves.

## Slide 30: Imitation and Make Believe

After age 2, children pretend with less realistic toys, such as a block for a telephone receiver. Play becomes slightly less self-centered. They pretend to feed the doll, rather than feeding themselves. At around two and a half, they begin to enter into socio-dramatic play. This is pretend play with peers, combining roles and schemes.

Gradually, they can flexibly imagine objects and events without support from the real world. Early in the third year, they become detached participants, making a doll feed itself or pushing a button to launch a rocket. Make-believe becomes less self-centered as children realize that recipients of pretend actions can be independent of themselves.

## Slide 31: Imitation and Make Believe - Activity 3

**Activity 3 – How can you support make-believe play in your classroom? Consider materials that can be added or altering the routine to allow more uninterrupted play. Encourage participants to consider their own programs and to be specific.**

## Slide 32: Imitation and Make Believe - Activity 3

Read over examples and ask for participants to offer to read their examples.

## Slide 33: Caregiver Responses

Infants and toddlers need help from caregivers to expand their pretend play. Beginning with infants, engage in imitation and repetition with facial expressions, toys, and songs. Play games and do finger plays in which older infants can imitate actions, such as “Itsy Bitsy Spider” and “Head, Shoulders, Knees, and Toes.”

Make time everyday for pretend play and always have a space dedicated to props and materials for pretend play. Keep a variety of toys and objects available, such as dolls, stuffed animals, dishes, and blocks. Respond to and elaborate on play themes when the children indicate that they need or desire assistance. Provide open-ended suggestions, “Would the animals like a bath?” Don’t control or direct play.

## Slide 34: Inclusion

Simple modifications to the environment and atmosphere of the classroom can make a significant difference to a child with special needs without affecting the overall classroom. The room

arrangement should promote easy accessibility for all children. The materials available can be adjusted or stored to accommodate the children.

It is important to alter expectations of the child's behavior. Behavior expectations should be based on the child's cognitive, social and emotional development.

Since transitions can be the most difficult part of the routine, provide a picture schedule that the child can keep with them, in their cubby or somewhere else accessible. Be sure that the schedule accurately depicts the routine for that day. This allows the child to predict transitions and be more prepared, supporting success.

Practicing inclusion and accommodating behavior differences supports the successful development of all of the children in the program.

## Slide 35: Inclusion

Take a look at the scenario in your participant guide and work in your small group to develop some inclusion practices.

**Direct participants to Activity 4 – In small groups, read through the scenario and create 2-3 inclusion strategies that might be appropriate for this child. Take 5 minutes in small groups and then give the groups an opportunity to share with the larger group. Allow productive and appropriate discussion for 5 minutes.**

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### TRAINER TIP:

If a discussion around a topic becomes polarized and unproductive, bring the group back together by summarizing the key issue and acknowledging that there are various perspectives. End the discussion with a statement everyone can agree with, for example, "Making reasonable and appropriate accommodations for children is simply meeting the individual needs of children. Something you do in your program every day." And then move on without pausing for more comments.

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## Slide 36: Inclusion

Read over examples listed on slide. Ask for volunteers to share their ideas.

## Slide 37: Cognitive Terms: Matching Activity

Ask Participants to take out the Matching Activity Handout and work in groups of 2 at their table to match the definitions to the correct Cognitive terms. Allow 10 minutes for participants to work together to match the definitions.

## Slide 38: Cognitive Terms: Matching Activity

After most of the participants have completed the matching activity, read over the answers and ask for feedback on what those terms mean. Next, make the point that we've been learning about Cognitive development today and the many terms associated with this developmental domain. This activity helps to recall those definitions in hands-on way.

## Slide 39: Conclusion

Cognitive Development includes thinking, understanding and reasoning and leads to successful traits such as persistence and independence. The earliest caregivers set the course for this development and contribute significantly to the child's success or struggle. Responsive caregiving, high-quality learning environments rich in materials and experiences, and peer interactions all contribute to cognitive development. Remember that infants, toddlers, and three-year-olds are very curious about their world and they learn through repetition and opportunities to freely explore their environment.

Take a moment to create a few action steps that you will implement as a result of this training. Share those with a partner.

If time allows, participants can share a few action items with the group. Open up the floor for questions. Allow maximum of 5 minutes for questions.

***Thank the participants for attending.***