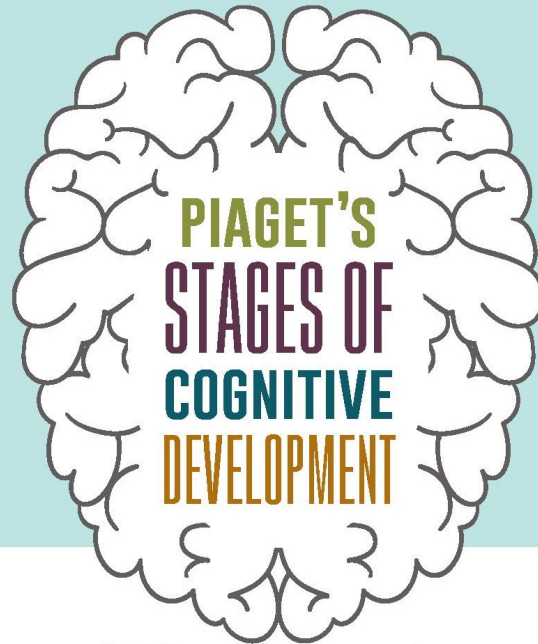


## Step 1 - Stages of Cognitive Development

A lesson's content, information, activities, and setting firstly depends upon abilities of a learner. Certain age groups are able to grasp certain concepts. Also, some groups are more apt to participate given certain facilitative conditions. Piaget's Four Stages of Development lays out each of these groups and their associated cognitive milestones.



**0-2 YEARS**

### SENSORIMOTOR

Explore the world through senses and actions

*looking, hearing, touching, mouthing, grasping*

DEVELOPMENT  
Object permanence  
Stranger anxiety



**2-7 YEARS**

### PREOPERATIONAL

Represent and refer to objects and events with words or images; use intuitive rather than logical reasoning; believe inanimate objects possess human feelings/emotions

DEVELOPMENT  
Pretend play  
Egocentrism



**7-11 YEARS**

### CONCRETE OPERATIONAL

Conserve, reverse their thinking, and classify objects; think logically and understand analogies but only about concrete events

DEVELOPMENT  
Conservatism  
Mathematical transformations



**12+ YEARS**

### FORMAL OPERATIONAL

Use abstract reasoning about hypothetical events/situations, consider logical possibilities, and systematically examine/test hypotheses

DEVELOPMENT  
Abstract logic  
Potential for mature, moral reasoning

Understanding your audience's level of cognitive development creates the foundation for choosing appropriate topics, activities, and instructional methods. Here are some examples of appropriate ideas for each group:

### 0-2 Sensorimotor Stage

**Topics:** at this stage, concrete topics are often not grasped. Focus on providing facilitation for major cognitive milestones. At this stage knowledge of the world around them is obtained through movement, cause and effect, and basic sensations.

**Sensory activities**—(i.e. including sand, pebbles, other textures, familiar objects, simple activities like tearing paper, finger painting, practicing using kitchen objects like tongs, silverware, or spoons)

**Build a soft obstacle course** with pillows, blankets, etc. Hide special objects to find in the course for more challenge

**Use black and white images for stimulation.** Babies can't start seeing colors until 4 months of age

**Read a story.** Choose simple books with large, simple pictures. Textures in books (like different animal furs) are excellent at first. Repetitive counting or color books are great later on in development

### 2-7 Preoperational Stage

**Topics:** dissecting parts of a flower or tree, star stories, habitat types, living versus non-living things, comparing different species

Lots of **fine motor skills activities** are still relevant in this stage. Threading large beads, practicing writing in shaving cream, painting, using clay, sensory bags, etc. Learning to think symbolically is also a major milestone (associating a texture with an animal, or a symbol with words or things.)

**Writing lists**—helps with practicing writing and organizing thoughts (i.e. top 10 favorite animals)

**Scavenger hunts** - especially outdoors, gets kids looking around at colors, textures, sizes, patterns, etc in Nature

**Self expression** - as toddlers develop past egocentrism (inability to differentiate between themselves and others), self-expression and exploration is important.

### 7-11 Concrete Operational Stage

**Topics:** At this stage, students begin to use reasoning and logic to make decisions. Students can also start understanding how others' feel, and can hold meaningful conversations. Appropriate topics include observing and recording, animal adaptations, defining natural resources, distinguish fact versus opinions, identify basic needs of living things.

**Constructing metaphors** and other forms of simple creative writing

**Identifying** common birds, plants, and animals

**Describe** life cycles, habitat, and adaptations of specific plants and animals

**Debate, discuss, and distinguish** between scientific fact and opinion

### 12+ Formal Operational Stage

**Topics:** Students can use logic and can act upon it. The ability to think hypothetically also emerges. Teens are capable of considering socioeconomic, cultural, and societal factors in decision making. Topics include local issue investigations, environmental justice, weather and climate, water quality, soil health

**Conduct investigations** that provide evidence and knowledge to help students make well-informed decisions

**Create models** to represent real world issues or phenomenon

**Experimentation**, especially those occurring outdoors

**Skill building**, such as map-making, writing, hiking, skiing, fishing, etc.