

## Cognitive Development: Applications\*

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<b>Teaching the Preoperational Child (Toddler and Early Childhood)</b>	
<b>Principle</b>	<b>Application</b>
Use concrete props and visual aids to illustrate lessons and help children understand what is being presented.	<ul style="list-style-type: none"> <li>• Use physical illustrations.</li> <li>• Use drawings and illustrations.</li> </ul>
Make instructions relatively short, using actions as well as words, to lessen likelihood that the students will get confused.	<ul style="list-style-type: none"> <li>• After giving instructions, ask a student to demonstrate them as a model for the rest of the class.</li> <li>• Explain a game by acting out the part of a participant.</li> </ul>
Do not expect the students to find it easy to see the world from someone else's perspective since they are likely to be very egocentric at this point.	<ul style="list-style-type: none"> <li>• Avoid lessons about worlds too far removed from the child's experience.</li> <li>• Discuss sharing from the child's own experience.</li> </ul>
Give children a great deal of physical practice with the facts and skills that will serve as building blocks for later development.	<ul style="list-style-type: none"> <li>• Use cut-out letters to build words.</li> <li>• Avoid overuse of workbooks and other paper-and-pencil tasks.</li> </ul>
Encourage the manipulation of physical objects that can change in shape while retaining a constant mass, giving the students a chance to move toward the understanding of conservation and two-way logic needed in the next stage.	<ul style="list-style-type: none"> <li>• Provide opportunities to play with clay, water, or sand.</li> <li>• Engage students in conversations about the changes the students are experiencing when manipulating objects.</li> </ul>
Provide many opportunities to experience the world in order to build a foundation for concept learning and language.	<ul style="list-style-type: none"> <li>• Take field trips.</li> <li>• Use and teach words to describe what they are seeing, doing, touching, tasting, etc.</li> <li>• Discuss what they are seeing on TV.</li> </ul>

<b>Teaching the Concrete Operational Child</b>
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(Middle Childhood)

Principle	Application
Continue to use concrete props and visual aids, especially when dealing with sophisticated material.	<ul style="list-style-type: none"><li>• Provide time-lines for history lessons.</li><li>• Provide three-dimensional models in science.</li></ul>
Continue to give students a chance to manipulate objects and test out their ideas.	<ul style="list-style-type: none"><li>• Demonstrate simple scientific experiments in which the students can participate.</li><li>• Show craftwork to illustrate daily occupations of people of an earlier period.</li></ul>
Make sure that lectures and readings are brief and well organized.	<ul style="list-style-type: none"><li>• Use materials that present a progression of ideas from step to step.</li><li>• Have students read short stories or books with short, logical chapters, moving to longer reading assignments only when the students are ready.</li></ul>
Ask students to deal with no more than three or four variables at a time.	<ul style="list-style-type: none"><li>• Require readings with a limited number of characters.</li><li>• Demonstrate experiments with a limited number of steps.</li></ul>
Use familiar examples to help explain more complex ideas so students will have a beginning point for assimilating new information.	<ul style="list-style-type: none"><li>• Compare students' own lives with those of the characters in a story.</li><li>• Use story problems in mathematics.</li></ul>
Give opportunities to classify and group objects and ideas on increasingly complex levels.	<ul style="list-style-type: none"><li>• Give students separate sentences on slips of paper to be grouped into paragraphs.</li><li>• Use outlines, hierarchies, and analogies to show the relationship of unknown new material to already acquired knowledge.</li></ul>
Present problems which require logical, analytical thinking to solve.	<ul style="list-style-type: none"><li>• Provide materials such as Mind Twisters, Brain Teasers, and riddles.</li><li>• Focus discussions on open-ended questions which stimulate thinking (e.g., are the mind and the brain the same thing?)</li></ul>

<b>Teaching Students Beginning to Use Formal Operations (Adolescence)</b>	
<b>Principle</b>	<b>Application</b>
Continue to use many of the teaching strategies and materials appropriate for students at the concrete operational stage.	<ul style="list-style-type: none"> <li>• Use visual aids such as charts and illustrations, as well a simple but somewhat more sophisticated graphs and diagrams.</li> <li>• Use well-organized materials that offer step by step explanations.</li> </ul>
Give students an opportunity to explore many hypothetical questions.	<ul style="list-style-type: none"> <li>• Provide students opportunities to discuss social issues.</li> <li>• Provide consideration of hypothetical "other worlds."</li> </ul>
Encourage students to explain how they solve problems.	<ul style="list-style-type: none"> <li>• Ask students to work in pairs with one student acting as the problem solver, thinking aloud while tackling a problem, with the other student acting as the listener, checking to see that all steps are mentioned and that everything seems logical.</li> <li>• Make sure that at least some of the tests you give ask for more than rote memory or one final answer; essay questions, for example, might ask students to justify two different positions on an issue.</li> </ul>
Whenever possible, teach broad concepts, not just facts, using materials and ideas relevant to the students.	<ul style="list-style-type: none"> <li>• While discussing a topic such as the Civil War, consider what other issues have divided the country since then.</li> <li>• Use lyrics from popular music to teach poetic devices, to reflect on social problems, and so on.</li> </ul>

\* Materials have been adapted from: Woolfolk & McCune-Nicolich. (1984). *Educational psychology for teachers*. (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall, Inc.

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