

## Implications for Teaching

Recent Research Suggests	Teaching Suggestions
The brain performs many functions simultaneously. Learning is enhanced by a rich environment with a variety of stimuli.	<ul style="list-style-type: none"> <li>• Present content through a variety of teaching strategies, such as physical activities, individual learning times, group interactions, artistic variations, and musical interpretations to help orchestrate student experiences.</li> </ul>
Learning engages the entire physiology. Physical development, personal comfort, and emotional state affect the ability to learn.	<ul style="list-style-type: none"> <li>• Be aware that children mature at different rates; chronological age may not reflect the student's readiness to learn.</li> <li>• Incorporate facets of health (stress management, nutrition, exercise) into the learning process.</li> </ul>
The search for meaning is innate. The mind's natural curiosity can be engaged by complex and meaningful challenges.	<ul style="list-style-type: none"> <li>• Strive to present lessons and activities that arouse the mind's search for meaning.</li> </ul>
The brain is designed to perceive and generate patterns.	<ul style="list-style-type: none"> <li>• Present information in context (real life science, thematic instruction) so the learner can identify patterns and connect with previous experiences.</li> </ul>
Emotions and cognition cannot be separated. Emotions can be crucial to the storage and recall of information.	<ul style="list-style-type: none"> <li>• Help build a classroom environment that promotes positive attitudes among students and teachers and about their work.</li> <li>• Encourage students to be aware of their feelings and how the emotional climate affects their learning.</li> </ul>
Every brain simultaneously perceives and creates parts and wholes.	<ul style="list-style-type: none"> <li>• Try to avoid isolating information from its context. This isolation makes learning more difficult.</li> <li>• Design activities that require full brain interaction and communication.</li> </ul>
Learning involves both focused attention and peripheral perception.	<ul style="list-style-type: none"> <li>• Place materials (posters, art, bulletin boards, music) outside the learner's immediate focus to influence learning.</li> <li>• Be aware that the teacher's enthusiasm, modeling, and coaching present important signals about the value of what is being learned.</li> </ul>

<p>Learning always involves conscious and unconscious processes.</p>	<ul style="list-style-type: none"> <li>• Use "hooks" or other motivational techniques to encourage personal connections.</li> <li>• Encourage "active processing" through reflection and metacognition to help students consciously review their learning.</li> </ul>
<p>We have at least two types of memory: spatial, which registers our daily experience, and rote learning, which deals with facts and skills in isolation.</p>	<ul style="list-style-type: none"> <li>• Separating information and skills from prior experience forces the learner to depend on rote memory.</li> <li>• Try to avoid an emphasis on rote learning; it ignores the learner's personal side and probably interferes with subsequent development of understanding.</li> </ul>
<p>The brain understands best when facts and skills are embedded in natural spatial memory.</p>	<ul style="list-style-type: none"> <li>• Use techniques that create or mimic real world experiences and use varied senses. Examples include demonstrations, projects, metaphor, and integration of content areas that embed ideas in genuine experience.</li> </ul>
<p>Learning is enhanced by challenge and inhibited by threat.</p>	<ul style="list-style-type: none"> <li>• Try to create an atmosphere of "relaxed alertness" that is low in threat and high in challenge.</li> </ul>
<p>Each brain is unique. The brain's structure is actually changed by learning.</p>	<ul style="list-style-type: none"> <li>• Use multifaceted teaching strategies to attract individual interests and let students express their auditory, visual, tactile, or emotional preferences.</li> </ul>
<p>Caine, R.N., Caine, G. (October 1990). Understanding a Brain Based Approach to Learning and Teaching. <i>Educational Leadership</i> 48, 2, 66-70. (Excerpts). Adapted by permission of the Association for Supervision and Curriculum Development. Copyright 1985 by ASCD.</p>	