



School to Home Connection

Secondary Level

Teachers expect their students to bring to the classroom certain levels of mental processing to empower mastery of reading, spelling, handwriting, mathematics and other basic and advanced curriculum content. So all students may improve their academic performance by developing the cognitive abilities that are foundational to all learning and behavior. Cognitive development is the purpose or by-product of the age-appropriate activities and products listed below. Depending on the student's developmental level and interests, the activities and products on our other lists (Grades K-2, 3, 4, 5-6) may also be appropriate.

Figural Thinking

Figural thinking is the ability to process information in the form of images, shapes and simple sounds. It appeals to the senses of sight, sound and touch - what we can directly see, hear and touch. It may be a photo, a sound, a gesture. This is a very important ability for beginning learners. Figural thinking is required to learn such subjects as Science and Drama.

- *The New Drawing on the Right Side of the Brain*, by Betty Edwards
- *Identifying and Harvesting Edible and Medicinal Plants: In Wild (And Not So Wild) Places*, by Steve Brill & Evelyn Dean
- Keyboarding or typing
- Computer graphics
- Drafting
- Fishing
- *DK Eyewitness Visual Dictionary* books (various)

Symbolic Thinking

Symbolic thinking is the ability to process information in the form of numbers, letters, signs, musical notation and other code systems that combine their elements in many diverse ways. Symbolic thinking is required to learn such subjects as Math and Computer Programming.

- Chemistry or Physics
- Jumble puzzles, books and software
- *Introduction to the Musical Brain*, by Don Campbell
- HTML programming
- *ChemEasy*, by M. Khodaveissi & E. Khodaveissi
- *Elements Explorer* software
- *Family Math: The Middle School Years*, by Virginia Thompson & Karen Mayfield-Ingram

Semantic Thinking

Semantic thinking is the ability to process information in the form of words and ideas. Semantic information is abstract because one person's interpretation of an idea can differ from another's. Nevertheless, this conceptual difference is usually not great enough to interfere with communication. Semantic thinking is required to learn such subjects as Language Arts and Social Studies.

- *The Oxford Book of Aphorisms*, by John Gross
- *MindTrap* games
- *Magnetic Poetry* kits
- *30 Second Mysteries* board game
- *Schrödinger's Kittens and the Search for Reality*, by John Gribbin

Comprehension

Comprehension is understanding - the immediate awareness or recognition of new information in any form. Students must be able to comprehend before they can learn. Comprehension is required to learn all school subjects.

- Speed reading
- *The Possible Human*, by Jean Houston
- Interpreting political cartoons
- Cataloging CDs, videos, cassettes, etc.
- Products from Critical Thinking Book & Software
- *Vocabulary Cartoons II*, by Sam Burchers

Memory

Memory is the retention or storage of information - and the ability to recall it when needed. Memory is required to learn any subject that involves memorization of rules, vocabulary, formulas, etc.

- *Trivial Pursuit* games and software
- Use metronome while repeating facts aloud
- *Password* game
- *Who Wants to Be a Millionaire* games and software
- *Visionary* game
- *You Don't Know Jack* games and software

Evaluation

Evaluation is decision-making - the process used to judge, evaluate, prioritize and analyze. It requires that an individual be able to compare what is to what should be. Evaluation is not often taught in school, but it is critical to most life skills.

- *The Physics of Baseball*, by Robert Kemp Adair
- *The Physics of Star Trek*, by Lawrence M. Krauss
- Solitaire card games and software
- *How to Host a Murder* kits
- *Math Advantage 2001* software
- *Excel @Mathematics* software
- *Smartworks Math Master* software
- Classic card games - *Rook*, *Flinch*, *Pit*, etc.

Problem-Solving

Problem-Solving is working out the answer to a problem that requires more than mere retrieval from memory. The student is asked to interpret information and derive the accepted correct solution. Problem-Solving is required to learn all school subjects.

- *Kaplan Higher Score Mathematics* software
- *Princeton Review* math software
- *TangraMagic* puzzles
- Science kits from Scientific Explorer
- *Mathematics: Middle School* software
- *Mathematics: High School* software
- *MINDSTORMS Robotics Invention Systems*
- *200% of Nothing*, by A. K. Dewdney

Creativity

Creativity is the production of unique or novel information where the emphasis is on variety and quality of output. It requires fluency, flexibility, originality, quality and discipline. There are no predefined correct answers, no rules to follow, so people use their creativity to invent something new. Creativity is not often taught in school, but it is the basis of the movies, music and art that we enjoy, and likewise of prize-winning discoveries in science and medicine.

- *Pictionary* games and software
- *Spinning Inward*, by Maureen Murdock
- *Roger's Connections* kits
- *Visual Brainstorms* card sets
- *Conceptual Blockbusting*, by James L. Adams
- Open-ended discussions of literature
- *Cranium* game
- *Teifoc* bricks