

Research on the Critical Thinking Reference Flip Charts

The No Child Left Behind Act (2001) emphasizes the need for research-based materials and states: “All States must identify a set of academic standards for core subject areas at each grade level.” Mentoring Minds’ *Critical Thinking Flip Charts* incorporate research-based strategies and pedagogically sound principles for teaching and learning and provide the academic standards for all core subject areas at each grade level in accordance to the requirements identified in the No Child Left Behind Act.

“Recognizing that there are different levels of thinking behaviors important to learning, Benjamin Bloom and his colleagues developed Bloom’s Taxonomy, a common structure for categorizing test questions and designing instruction. The taxonomy is divided into six levels, from basic factual recall, or Knowledge, to the highest order, Evaluation, which assesses value or asks the teacher or learner to make judgments among ideas.” Each flip chart identifies and defines the six levels of thinking (Bloom, Englehart, Furst, Hill, and Krathwohl, 1956), provides effective questions for each level, and suggests multiple questioning prompts at each of the six levels of Bloom’s Taxonomy.

In the 1950s, Bloom found that 95% of the test questions developed to assess student learning required them only to think at the lowest level of learning, the recall of information. Similar findings indicated an overemphasis on lower-level questions and activities with little emphasis on the development of students’ thinking skills (Risner, Skeel, and Nicholson, 1992). “Now, a considerable amount of attention is given to students’ abilities to think critically about what they do” (Hobgood, Thibault, and Walbert, 2005). Leaders in various businesses, medical fields, and other professions have voiced their concern that schools are not preparing students to be critical thinkers. Having knowledge of the procedure for CPR, how to estimate expenses, or being able to calculate elapsed time is no longer enough. These skills have little value without the ability to know how, when, and where to apply them. Thus, teachers must consistently utilize the array of questions to students at the analysis, synthesis, and evaluation levels as noted on the *Critical Thinking Reference Flip Charts*.

Critical thinking is an important issue in education today. Attention is focused on good thinking as an important element of life success. (Huitt, 1998; Thomas and Smoot, 1994). Studies over the last 40 years have confirmed Bloom’s Taxonomy of the Cognitive Domain as a framework to establish intellectual and educational outcomes. The conclusions reached by researchers substantiate that students achieve more when they manipulate topics at the higher levels of Bloom’s Taxonomy. A revised version of Bloom’s Taxonomy is also included (Anderson, Krathwohl, Airasian, Crusikshank, Mayer, Pintrich, Raths, and Wittrock, 2001).

Research indicates that thinking skills instruction makes a positive difference in the achievement levels of students. Studies that reflect achievement over time show that learning gains can be accelerated. In verbal learning, research reports that the depth with which students process information has a definite impact on retention (Craik, 1979; Haller, Child, and Walberg, 1988). These results indicate that the teaching of thinking skills can enhance the academic achievement of participating students (Bass and Perkins, 1984; Freseman, 1990; Matthews, 1989; Nickerson, 1984). Therefore, Mentoring Minds' *Critical Thinking Reference Flip Charts* provide support in teaching critical thinking and meet the requirements for incorporating research-based strategies and pedagogically sound principles for teaching and learning.

K-3 *Critical Thinking Reference Flip Charts* contain the 220 most frequently found words in books that children read. Vocabulary is important in learning to read. Stahl and Fairbanks (1986) concluded that instruction centered on words like the high-frequency word lists can boost a student's ability to comprehend new content by 12 percent. Building word recognition skills means increasing the number of words that a reader can recognize effortlessly and without thought. These skills lead a student to recognize words automatically. Increasing difficulties arise as students progress through the grades, particularly at the secondary level, when the reading load in content areas such as math, science, and social studies greatly increases. Reading can be easier and a student can maintain the pace as the reading load increases if automaticity of a large group of words has been acquired early on in school. Recognizing words and phrases on sight improves reading fluency and comprehension.

"All states and schools will have challenging and clear standards of achievement and accountability for all children and effective strategies for reaching those standards" (NCLB, 2001). These high standards give direction to schools as they work collaboratively toward common academic goals. The *Critical Thinking Reference Flip Charts* ensure that each teacher who uses the flip charts has been provided a set of academic standards as required by the No Child Left Behind Act (2001). The Critical Thinking Flip Charts contain the State Standards, Benchmarks, and Indicators at each grade level and for every subject. These skillfully designed teaching tools fit conveniently into a lesson plan book and provide quick and easy access to State Standards. The *Critical Thinking Reference Flip Chart* is an excellent resource to help educators prepare students for success.

Bibliography for the Critical Thinking Reference Flip Chart

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