

Deep Conceptual and Procedural Knowledge:

Knowledge is deep when it concerns the central ideas of a topic or discipline with enough thoroughness to explore connections and relationships and to produce relatively complex understandings. Depth is produced, in part, by covering fewer topics in systemic and connected ways. For students, knowledge is deep when they make clear distinctions, develop arguments, solve problems, construct explanations, and otherwise work with relatively complex understandings. Deep procedural knowledge occurs when students have internalized the concepts, rules, and procedures required to carry out a task. They are then able to take their understandings, identify goals and plan and implement steps to reach goals that take into account all environmental factors that may impact them completing the task. Teaching for Understanding as well as a Balanced Assessment System are characteristics of teaching for acquisition of Deep Conceptual and Procedural Knowledge.

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2. Star, Jon. (2002). *Re-“Conceptualizing” Procedural Knowledge in Mathematics*, Univ. of Michigan. EBSCO. 8 pages.
3. Zemelman, Steven, Daniels, Harvey & Hyle, Arthur. (2005). *Best Practice: Today’s Standards for Teaching & Learning in America’s Schools*, 3rd Ed. New Hampshire: Heinemann.