This list of teaching strategies and activities was developed out of a focused brainstorming process conducted with general education, special education and English as a Second Language teachers in Minnesota during the 2001-2002 school year. The list represents strategies and activities that teachers report that they use (or have used) to teach middle school-aged English language learners with disabilities. In most cases, the words that the teachers used to describe a strategy or activity are what is presented here in the glossary. A few of the strategies listed have definitions taken from professional literature. In the 2004-2005 school year NCEO will conduct single-case studies with ELLs who have disabilities that will be based on selected strategies from this list. For more information see http://education.umn.edu/NCEO/

Glossary of Math Teaching Strategies

Accelerated or individualized math: a system of having students work at different levels individually in one classroom. They progress by passing tests for each unit and move at their own pace.

Adjusted speech: teacher changes speech patterns to increase student comprehension. Includes facing the students, paraphrasing often, clearly indicating most important ideas, limiting asides, etc.

Curriculum Based Probe: having students solve 2-3 sheets of problems in a set amount of time assessing the same skill. Teacher counts the number of correctly written digits, finds the median correct digits per minute and then determines whether the student is at frustration, instructional, or mastery level.

Daily re-looping of previously learned material: A process of always bringing in previously learned material to build on each day so that students have a base knowledge to start with and so that learned structures are constantly reinforced.

Ecological approach/generate data from real life experiences to use in class: involves all aspects of a child's life, including classroom, family, neighborhood, and community, in teaching the child useful life and educational skills.

Explicit timing: timing math seatwork in 30-minute trials that are used to help students become more automatic in math facts and more proficient in solving problems. Teacher compares correct problem per minute rate. Used to recycle materials and concepts.

Explicit vocabulary building through random recurrent assessments: Using brief assessments to help students build basic subject-specific vocabulary and also gauge student retention of subject-specific vocabulary.

Graphic organizers: visual displays to organize information into things like trees, flowcharts, webs, etc. They help students to consolidate information into meaningful whole and they are used to improve comprehension of stories, organization of writing, and understanding of difficult concepts in word problems.

Model-lead-test strategy instruction (MLT): 3 stage process for teaching students to independently use learning strategies: 1) teacher models correct use of strategy; 2) teacher leads students to practice correct use; 3) teacher tests' students' independent use of it. Once students attain a score of 80% correct on two consecutive tests, instruction on the strategy stops.

Monitoring of progress through group and individual achievement awareness charts: Using charts to build awareness and motivation of progress for students. The emphasis here is on progress so even students working at different levels can chart significant gains.

Native language support: providing auditory or written content input to students in their native language.

Problem solving instruction: explicit instruction in the steps to solving a mathematical or science problem including understanding the question, identifying relevant and irrelevant information, choosing a plan to solve the problem, solving it, and checking answers.

Reciprocal peer tutoring (RPT) to improve math achievement: having students pair, choose a team goal to work toward, tutor each other on math problems, and then individually work a sheet of drill problems. Students get points for correct problems and work toward a goal.

Reinforcing math skills through games: Using games to follow-up a lesson in order to reinforce learned skills and use the skills in another context.

Response journal: Students record in a journal what they learned that day or strategies they learned or questions they have. Students can share their ideas in the class, with partners, and with the teacher.

Student developed glossary: Students keep track of key content and concept words and define them in a log or series of worksheets that they keep with their text to refer to.

Students generate word problems: Have students create word problems for a specific math skill. Through the construction of a problem the students learn what to look for when solving word problems they are assigned.

Tactile, concrete experiences in math: Using three dimensional objects in math instruction such as geometrical shapes, coins, or blocks used to form various geometrical shapes.

Think-alouds: using explicit explanations of the steps of problem solving through teacher modeling metacognitive thought. Ex: Reading a story aloud and stopping at points to think aloud about reading strategies/processes or, in math, demonstrating the thought process used in problem solving.

References:

Celce-Murcia, M. (Ed.). *Teaching English as a second or foreign language.* 3rd Ed. Boston: Heinle & Heinle.

Chamot, A.U. & O'Malley, J.M. (1994). *The CALLA handbook: Implementing the cognitive academic language learning approach*. New York: Addison-Wesley.

ERIC Digest. (1993). *Teaching limited English proficient students to understand and use mathematics*. ERIC DIGEST 70. (EDO-UD-91-0). Document accessed on the web: http://eric.web.tc.Columbia.edu/digests/dig70.html on February 23, 2001.

Laturnau, J. (2001, June). *Standards-based instruction for English language learners*. PREL Briefing Paper (PB0102). Honolulu, HI: Pacific Resources for Education and Learning.

Meyen, E.L., Vergason, G.A., & Whelan, R.J. (1996). *Strategies for teaching exceptional children in inclusive settings.* Denver: Love Publishing Co.

Rathwon, N. (1999). *Effective school interventions: strategies for enhancing academic achievement and social competence.* New York: The Guilford Press NYC.

Smith, T. et al. (1995). *Teaching children with special needs in inclusive settings.* Allyn and Bacon.