



## FLUENCY & REMEMBERING BY CARL BINDER, PH.D.

Did you ever have to memorize a poem or perhaps commit the times tables to memory? What does it really mean to memorize something and what is the place of memory in education? In academic journals, these questions are related to the topics of retention and maintenance of skills and knowledge, and they are at the heart of effective learning and teaching methods.

One of the biggest problems that teachers and parents face each year is that students often seem unable to recall skills or knowledge that they supposedly learned prior to summer or winter vacations. Spelling words, science facts, math skills, language arts, and content from other areas of curriculum just seem to disappear after periods as short as a few weeks. As a result, teachers spend large portions of each school year – many hundreds of teaching hours – going over topics and re-instructing skills covered in previous years. If teachers don't re-instruct, students may find themselves lost and unable to progress further through the curriculum. Even when teachers do "give" students the knowledge, they may not see expected improvements in students' performance.

What is wrong with this system that requires so much re-work and repetition? What we have found at the Haughton Learning Center and elsewhere through use of Precision Teaching, is that fluency – the ability to perform quickly and without hesitation – is the missing ingredient in efforts to ensure retention and maintenance of skills and knowledge.

Basic mathematics provides a good example of where fluency can make the important difference between remembering and forgetting. While competent adults can typically write the correct answers to simple math problems (e.g.,  $7+2$ ) at between 80 and 110 per minute – even if they have not practiced the skill for months or years – many students never even have the opportunity in school to perform that skill any more rapidly than 20 or 30 answers per minute. At that rate, it takes two or three seconds to "remember" each answer and that is simply not good enough to support easy application to more complex math or to word problems. Moreover, if students have only achieved 20 to 30 per minute on basic math facts, it's likely that they'll completely forget many of the answers if they go weeks or months without using the knowledge (e.g., over summer vacation). They'll find it difficult and therefore unpleasant to apply the skill and will therefore avoid opportunities that

come up in their daily lives to do mental math or to compute without an electronic calculator. Once again, teachers will decide to "teach" it again, or simply to let students pass without ever mastering the skill – perhaps assuming that they'll get it eventually. Unfortunately, that means that the students will continue to struggle, probably dislike math and ultimately miss out on the fun and inherent rewards of continuing to progress smoothly through the math curriculum.

The illustration of this "forgetting" problem in math applies to nearly every other curriculum area. At the Haughton Learning Center, we see the results of such educational failure every day in students who neither enjoy learning nor have the foundation for learning success. Without practice to fluency, students do not remember or maintain newly learned skills and knowledge. Consequently, they build higher order skills and knowledge on what becomes a weak and crumbling foundation – one that requires "rebuilding" over and over again due to forgetting.

Precision Teachers have found that when students achieve fluency in important prerequisite skills and knowledge they do not forget. Instead, more advanced work becomes easier rather than harder and learning becomes fun rather than tedious. Every day we see children whose educational limitations have turned to learning success because they can now remember and apply what they have learned. Often to the surprise of their parents and teachers outside the Center, they do not require re-instruction after each vacation period.

We have discovered that fluency and the practice that helps students achieve it, is the key to remembering and applying newly learned skills and knowledge. With the methods of Precision Teaching, we at the Haughton Learning Center apply this simple principle in a way that is not truly "magic" but sometimes may seem so.

*DR. CARL BINDER has been at the forefront of educational research and practice since the 1970's and has developed fluency-based learning programs for students of all ages and abilities, adult learners and corporate employees. His 25-year professional association with Elizabeth Haughton continues at the Haughton Learning Center, where he serves as a consultant, supporting her pioneering efforts to bring Precision Teaching methods to children and their parents.*