

1987).

3. Howard Gardner, *Frames of Mind* (New York: Basic Books, 1983). See also M. Scherer, "How Many Ways Is a Child Intelligent?", *Instructor* (January 1983)

Acquiring better logical and verbal skills - bottom line - they need to be useable as they are taught --- the student needs to feel ownership and needs to be able to apply them and celebrate their usefulness.

Six major principles for maximizing teaching effectiveness:

- 1) Stick to big ideas that provide broad concepts and understanding that is most likely to be needed and valued in adult life
- 2) Sequence teaching in ways that are easy to follow and include the big picture, followed by explicit steps for success, then rounding back to the big picture --- use visualizations when possible
- 3) Help students see how the concepts fit into life, providing a sense of ownership, and when students get excited, help them succeed with scaffolding that permits ongoing success
- 4) Use organization and strategic planning that can be made transparent for the student and help them gain a sense of ownership in that organization -- and how new concepts hook to old successes and constructs
- 5) Prime necessary knowledge for future concepts and re-teach, review and use older concepts so students have access to ideas from the past as well as "hooks" for future ideas. Memory may need to be tickled often.
- 6) Provide immediate and ongoing ways for the knowledge to be utilized and set up sessions that provide opportunities for application, being judicious about adequate, distributed, cumulative and varied opportunities to review and apply knowledge.



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Memory issues

	<p>"What did you want me to do?" "What homework?" "For every action there is an equal and opposite reaction." "What does that mean to me?" "I know you are supposed to invert the divisor, but then what?" "Yeah, I'm supposed to bring my book to class, but I can't get in my locker." "You mean today's the test?"</p>	<p>Definition: There are several parts of the brain involved in remembering words, concepts, recall of spatial and kinesthetic areas.</p> 
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Sensory store - all the information that is coming in and bombarding us from our senses

Working memory (usually about seven bits of data at a time) serves two roles, to sort out what is important from the sensory store and retrieves data from the memory store to solve problems

Short term memory holds on to data for brief periods of time. It may get put into long term memory or just dropped from thought - often no longer than 2 weeks of recall is available.

Long term memory is all the bits and pieces stored in the brain that is retrievable. Some memories come from our earliest cognitive moments.

The steps to acquire more memory, long and short term

Sometimes it is about **memory skills**. Here are some ideas for strengthening basic facts. Garnett, 1998. http://www.ldonline.org/ld_indepth/math_skills/garnett.html

Interactive and intensive practice with motivational materials such as games

... attentiveness during practice is as crucial as time spent

Distributed practice, meaning much practice in small doses

... for example, two 15-minute sessions per day, rather than an hour session every other day

Small numbers of facts per group to be mastered at one time

...and then, frequent practice with mixed groups-

Emphasis is on "reverses," or "turnarounds" (e.g., $4 + 5/5 + 4$, $6 \times 7/7 \times 6$)

...In vertical, horizontal, and oral formats

Student self-charting of progress

... having students keep track of how many and which facts are mastered and how many more there are to go

Instruction, not just practice

... Teaching thinking strategies from one fact to another (e.g., doubles facts, $5 + 5$, $6 + 6$, etc. and then double-plus-one facts, $5 + 6$, $6 + 7$, etc.).

Acquiring and practicing for expertise


- 1. Increase Attention.** Students will not remember something that they did not pay attention to in the first place. Be sure your students' memory problems are not really attention problems. Use strategies for enhancing attention, such as intensifying instruction, teaching enthusiastically, using more visual aids and activities, and reinforcing attending.
- 1. Promote External Memory.** Many things that need to be remembered can be written down, a practice known as "external memory." Practices such as keeping an assignment notebook and maintaining a student calendar can be helpful in remembering to do things. Unfortunately, external memory is usually of little use (ethically, anyway) on tests.
- 2. Enhance Meaningfulness.** Find ways to relate the content being discussed to the student's prior knowledge. Draw parallels to the students' own lives. Bring in concrete, meaningful examples for students to explore so the content becomes more a part of their experience.
- 3. Use Pictures.** Pictures can provide a memory advantage. Use pictures on the chalkboard or on the overhead projector. Bring in photographs or other illustrations. Show concrete images on videotape, when appropriate. If pictures are simply unavailable, ask students to create images, or "pictures in their heads."
- 4. Use Mnemonic devices.** Teach songs, jingles, key words, visualizations, make parts out of concepts and then make whole concepts out of parts..... for example the Great Lakes can be remembered using **HOMES** - Huron, Ontario, Michigan, Erie, Superior
- 5. Minimize Interference.** Avoid digressions and emphasize only the critical features of a new topic. Make sure all examples relate directly to the content being covered.
- 6. Promote Active Manipulation.** Students remember content better when they experience it for themselves (Scruggs, Mastropieri, Bakken, & Brigham, 1993). For example, rather than lecturing the class on the effect of weak acid (such as vinegar) on calcite, allow students to place calcite in a glass of vinegar and see for themselves.
- 7. Promote Active Reasoning.** Students remember better if they actively think through new information, rather than simply repeating it. For example, rather than simply telling students that penguins carry their eggs on the tops of their feet, ask students why it makes sense that penguins would carry their eggs on the tops of their feet.
- 8. Increase the Amount of Practice.** Students remember information better if they have practice using it more frequently. Use lots of review in your teaching; do not simply finish one topic and then never mention it again. Remind the class, and have students practice previous information frequently. - from Mastropieri & Scruggs, 1998, Enhancing school success with mnemonic strategies http://www.ldonline.org/ld_indepth/teaching_techniques/mnemonic_strategies.html



Building confidence and relationship actually supports memory work

- Increase hope and belief in ability to learn
- Feel good about self and blood is in working part of the brain
- Once memory starts to work, feeling of efficacy builds recall capacity
- Sense of hope lowers anxiety level and increases potential for recall

Organization

	<p>I know it's in here somewhere." "I'm sure I did it. Didn't I already turn it in?" "No, I don't have my book. Somebody took it out of my locker, alright?" "Today? The test was today?"</p>	<p>Definition: Executive function is required for the brain to sequence, store and recall information. Most youngsters with learning issues have their greatest difficulty in this area.</p>
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Skills that contribute to organizing school work

Sometimes, students can learn to do this, but most often, the majority of change needs to occur in the teacher and educational practices. Assisting and monitoring students will pay off. Remember to do this in a matter-of-fact way, free of recrimination, nagging, belittling, anger.

Assignments and homework

1. Give assignments at the beginning of class rather than at the end of class
 - a. Use an assignment notebook.
 - b. Individualize assignments to meet specific target skills that are emerging rather than at the frustration level..... PLEASE remember to send practice work that is really practice.
 - c. Teacher can double check and initial notations before going for the day.
2. Fax assignments to parents who want to know the work for the week or set up a list serve of family emails and have a student write and send out a general message for the day.
3. Record the general homework for the night on a class telephone.
4. Have a student post the homework for the day on the door as school closes for the evening, then students who wish can come back and check if it is forgotten.
5. Start homework during school and provide opportunities throughout the day to support and help students as they work on assignments.

Books and supplies

6. Have two sets of books so students can keep one set at home and still have some in the classroom.
7. Build community by having students share books, supplies, materials without stigma.
8. Have a set of supplies in the classroom available to everyone and when practical, ask students to bring in extras for everyone.

Note taking

9. Start with a T line for learning to take notes

Things I like to do

Inside	Outside
I	
I	
I	
I	

Early Americans

People	Dates	Events
I		I
I		I
I		I