

A few Words on “The Science of Reading”

The “Science of Reading” has recently become a common phrase among educators, and its implications are worth exploring. We suggest reading the link below from the Northwest Evaluation Association. We know almost nothing about NWEA, but their description is brief and useful.

<https://www.nwea.org/blog/2022/the-science-of-reading-explained/>

As you see, five major skill areas are highlighted, and, as we have previously pointed out, the Stevenson Reading Program incorporates specific instruction in each of the five main categories mentioned.

Many of you will know that during the last two decades, there was great emphasis placed on using “Research Based Reading Methods.” However, the research on individual programs has recently been questioned, as you will see in this article:

<https://hechingerreport.org/proof-points-leading-dyslexia-treatment-isnt-a-magic-bullet-studies-show-while-other-options-show-promise/>

The emphasis has shifted from individual research studies to the overall conclusions that can be made. The results are fairly clear. Good reading instruction needs to include the following areas:

- Phonological awareness
- Phonics and word recognition
- Fluency
- Vocabulary and oral language comprehension
- Text comprehension

Stevenson teaches these abilities in UNIQUE ways. Scroll down to see more.

Widely Accepted Guidelines For Dyslexia Programs and Other Reading Methods Based on the "Science of Reading"

During the 1990's professionals at the National Institute of Child Health and Development focused attention on a large body of research on how children learn to read and why some encounter great difficulties. This and subsequent work sponsored by the NICHD was subject to a new level of scientific rigor. This effort has resulted in some general findings about what methods are most effective for teaching beginning reading and preventing reading failure. There is, as always, some debate about the conclusions, but there is also widespread agreement about the validity of much of this research, and we at Stevenson Learning Skills find most (although not 100%) of the ensuing recommendations to be consistent with our philosophy and experience. The findings of the NICHD can be summarized with the following quote from Jack M. Fletcher and G. Reid Lyon:

"The NICHD research supports a prominent role for explicit instruction in phonics and phonological awareness skills (i.e., alphabetic principal) for beginning reading instruction, particularly for children at risk for reading failure. It also shows how these skills are involved in learning to read for all children, regardless of how they are taught."¹

(The authors go on to point out that the research should **not** be interpreted as advocating an **exclusive** phonics approach.)

A free booklet made available by the U.S. Department entitled *Put Reading First: The Research Building Blocks for Teaching Children to Read* summarizes some of the recommendations that have resulted from this research. The booklet was produced by the Partnership for Reading – Bringing Scientific Evidence to Learning. It identifies five areas of reading instruction that are important to successfully teach children to read. They are:

- Phonemic Awareness
- Phonics
- Fluency
- Vocabulary
- Text Comprehension

Here are some brief descriptions of how the Stevenson Language Skills Program handles these areas.

Phonemic Awareness – The Stevenson Program works to develop phonological awareness at many points but concentrates phonemic awareness instruction at the Beginning Level. Students are taught to be aware of sound formation in a multisensory fashion as they learn sound/symbol correspondence, and specific phonemic awareness are then given for individual letters. Special auditory discrimination exercises are given in the Beginning Level spelling exercises and phonemic awareness is practiced regularly with encoding steps. (Stevenson spelling and reading vocabulary is completely coordinated so that encoding and decoding mirror and reinforce each other.)

Phonics – The foundation structure of the Stevenson Program is phonics. Students learn individual sound-symbol relationships in a multisensory, multi-modality fashion and quickly

apply these relationships to letter patterns as well. The program systematically builds both decoding and encoding skills with letters, letter patterns and syllable patterns. The phonics method is principally synthetic, but analytic and analogy-based phonics are also employed and all phonics instruction is integrated with spelling. The sequence of language units is carefully designed to lead with sounds that are easier for auditory processing and with linguistic structures that are orthographically regular. Of course, almost all phonics instruction in the Stevenson Program is enhanced with mnemonics.

Fluency - The Stevenson Program does not incorporate any activities in its manuals specifically for developing fluency, but it does provide the essential material necessary to perform the exercises that are most effective for creating fluent readers. According to Rebecca Felton (among others), the most important task for the development of fluency is "the repeated oral reading of decodable text."² The structured phonics base and the controlled vocabulary in the Stevenson reading books provide an excellent medium for performing fluency exercises. There is some debate in educational circles as to whether full text or simple word lists (or both) to improve fluency, but Stevenson readers provide an ample supply of both. There is also debate as to how soon to emphasize fluency and how much to repeat reading passages. Educators can time fluency work however they deem appropriate and still use the Stevenson reading books.

Vocabulary - The Stevenson Program demonstrates a consistent, systematic commitment to building vocabulary. A sound vocabulary is an essential prerequisite of reading for meaning and comprehension - the ultimate goal of all reading instruction. Not only is explicit vocabulary instruction included in every lesson of the Program, but this instruction proceeds in specific steps to ensure that students fully internalize meanings. The Seven Special Vocabulary Building Steps emphasize the importance of visual imagery, but also fully reflect the multidimensional aspect of learning word meanings by utilizing demonstration, definition and more.

Text Comprehension - Many of the most common and effective strategies for improving text comprehension can be found in suggestions in various places the Stevenson manuals. In the Stevenson Program, however, many of the classic comprehension exercises are used more in the second and third levels than in the first level (where decoding and vocabulary instruction receive greater emphasis). The most obvious comprehension exercises involve the asking of explicit text oriented questions, which students are taught to answer in complete sentences both orally and in writing. Other comprehension activities are suggested during oral reading assignments, but it is assumed that much other important comprehension work - such as monitoring student understanding, developing meta-cognition and guiding reading practice - will be implemented by the teacher without explicit direction from the manuals.

The Use of Mnemonic Instruction

We feel strongly that mnemonics are one of the most under-appreciated and under-utilized tools in education today. This is particularly true for the instruction of students who learn to read differently (i.e., dyslexic and/or learning disabled pupils). The Stevenson Language Skills Program uses mnemonic clues (memory aids) systematically throughout its phonics instruction for reading and spelling, and also applies this methodology to handwriting, vocabulary building, grammar and other language arts. The kind of mnemonics Stevenson uses is also unusual. Many clues are what memory researcher Kenneth Higbee has described as "process mnemonics."³ These clues help students remember not only individual words or word spellings, but also groups of words and linguistic structures. They teach the dynamic processes of English, such as the effects of prefixes and suffixes on words, without having to teach a large number of abstract rules. In this sense the clues are not only memory aids, but also models that clarify a confusing topic.

There is ample research to support the effectiveness of mnemonic instruction. In fact, one article in *Teaching Exceptional Children* found that, of 18 different types of interventions in special education (ranging from medication to teaching techniques), mnemonic instruction appeared to be the most effective.⁴ We have included a selected bibliography of research articles on mnemonics below. These articles are not specifically about the Stevenson method of teaching reading and spelling, and many are not about language skills at all. These articles, however, demonstrate the efficacy of mnemonics, and Stevenson uniquely and extensively utilizes mnemonics.

Condus, M., Marshall, K., & Miller, S. AEffects of the Keyword Mnemonic Strategy on Vocabulary Acquisition and Maintenance by Learning Disabled Children≡. Journal of Learning Disabilities, Vol.19, No.10, 1996.

Ehri, L.C., Deffner, N.D., & Wilce, L.S., University of California, Davis, A Pictorial Mnemonics for Phonics≡. Journal of Educational Psychology, Vol. 76, No. 5, 880-883, 1984.

Ferro, S.C., & Pressley, M.G. AImagery Generation by Learning Disabled and Average-achieving 11- to 13-Year-olds≡. Learning Disabilities Quarterly, Vol. 14, Summer, 1991.

Gaskins, R.W., Gaskins, J.C., & Gaskins, I.W. APoor Readers-and the Rest of the Class Too!≡. Language Arts, Vol. 68, March, 1991.

Forness, S., Kavale, K., Blum, I., Lloyd, J., "Mega-Analysis of Meta-Analyses≡ Teaching Exceptional Children, July/August 1997

Lange, G., & Pierce, S.H., Human Development and Family Studies, University of North Carolina, Greensboro. AMemory-Strategy Learning and Maintenance in Preschool Children≡. Developmental Psychology, Vol. 28, No. 3, 453-462, 1992.

Levin, J.R., McCormick, C.B., Miller, G.E., & Berry, J.K., University of Wisconsin & Pressley, M., University of Western Ontario. AMnemonic Versus Nonmnemonic Vocabulary-Learning Strategies for Children≡. American Educational Research Journal, Vol. 19, No. 1, 121-136, Spring, 1982.

Lipson, M., Hunter College, CUNY, New York, NY. AEffects of a Mnemonic Imagery Strategy on the Prose Recall of Developmental and Nondevelopmental College Readers≡. Reading Improvement, Fall, 1996.

Mastropieri, M.A., Emerick, K., & Scruggs, T.E. AMnemonic Instruction of Science Concepts≅. Behavioral Disorders, Vol. 14, No. 1, 48-56, November, 1988.

Mastropieri, M.A., Scruggs, T.E., Levin, J.R., Gaffney, J., & McLoone, B. AMnemonic Vocabulary Instruction for Learning Disabled Students≅. Learning Disability Quarterly, Vol. 8, Winter, 1985.

Mastropieri, M.A., Scruggs, T.E., & Levin, J.R. AMnemonic Strategy Instruction with Learning Disabled Adolescents≅. Journal of Learning Disabilities, Vol. 18, No. 2, February, 1985.

Mastropieri, M.A., Scruggs, T.E., & Mushinski Fulk, B.J. ATeaching Abstract Vocabulary with the Keyword Method: Effects on Recall and Comprehension≅. Journal of Learning Disabilities, Vol. 23, No. 2, Feb., 1990.

McDaniel, M., Einstein, G., & Waddill, P. AMaterial-appropriate Processing: Implications for Remediating Recall Deficits in Students with Learning Disabilities≅. Learning Disability Quarterly, Vol. 13, Fall, 1990.

Peterson Miller, S., & Mercer, C.D. AMnemonics: Enhancing the Math Performance of Students with Learning Difficulties≅. Intervention in School and Clinic, Vol. 29, No. 2, 78-82, November, 1993.

Rose, M.C., Cundick, B.P., & Higbee, K.L. AVermal Rehearsal and Visual Imagery: Mnemonic Aids for Learning-Disabled Children≅. Journal of Learning Disabilities, Vol. 16. No. 6, June/July, 1983.

Scruggs, T.E., & Mastropieri, M.A., Purdue University. AClassroom Applications of Mnemonic Instruction: Acquisition, Maintenance, and Generalization≅. Exceptional Children, December/ January, 1992.

Scruggs, T.E., & Mastropieri, M.A., Purdue University. AThe Case for Mnemonic Instruction: From Laboratory Research to Classroom Applications≅. The Journal of Special Education, Vol. 24, No. 1, 1990.

Scruggs, T.E., Mastropieri, M.A., Brigham, F.J., & Sullivan, G.S. AEffects of Mnemonic Reconstructions on the Spatial Learning of LD Adolescents≅. Learning Disability Quarterly, Vol. 15, No. 3, Summer, 1992.

Scruggs, T.E., Mastropieri, M.A., Sullivan, G.S., & Hesser, L.S. AImproving Reasoning and Recall: The Differential Effects of Elaborative Interrogation and Mnemonic Elaboration≅. Learning Disability Quarterly, Vol. 16, Summer, 1993.

Scruggs, T.E., & Mastropieri, M.A. AMnemonic Instruction of LD Students: A Field-based Evaluation≅. Learning Disability Quarterly, Vol. 12, Spring, 1989.

Scruggs, T.E., & Mastropieri, M.A. AMnemonic Instruction for Students with Learning Disabilities: What it Is and What it Does≅. Learning Disability Quarterly, Vol. 13, Fall, 1990.

Wang, A.Y., Thomas, M.H., University of Central Florida, & Ouellette, J.A., Texas A&M University. AKeyword Mnemonic and Retention of Second-Language Vocabulary Words≅. Journal of Educational Psychology, Vol. 84, No. 4, 520-528, 1992.

Phonics, Phonemic Awareness And Multisensory Language Instruction

This section lists some selective sources of information on some of the key methodologies applied in the Stevenson Program. The research on the effectiveness of phonics is voluminous and long-standing. We will not attempt to cover it extensively here. We have, however, included some sources of information here that might be helpful or representative.

Please note that one book that is not listed below is *Reading: The Great Debate* by Jeanne S. Chall, which was originally published in 1967 and updated in 1984. While it does not contain the most up-to-date research, it provides one of the best historical perspectives available on phonics, and you may wish to refer to it.

Also, please note that multisensory structured phonics is a well-accepted approach that was essentially originated by Anna Gillingham in collaboration with Dr. Samuel Orton. The Orton-Gillingham Method (O-G) may still be the best known multisensory program, but there are now many others. Most, but not all, of these methods have derived from O-G training. The Stevenson Program is one of the few multisensory programs that was **not** derived from O-G. It often combines the auditory, visual, tactile and kinesthetic modalities in different ways from the classic O-G approach, but it **does** use these multisensory modalities thoroughly and systematically. Stevenson also presents phonics units in a different sequence from most of the O-G derivative programs and, of course, it uses mnemonics uniquely and extensively as part of its instruction.

Books:

1. Title: Adams, Marilyn J. *Beginning to Read: Thinking and Learning About Print*. Cambridge, MA: MIT Press, 2001.

Comments: This is one of the most extensive discussions of both the reading process and the different ways of teaching reading that we know. It is comprehensible to laymen while also being professional and technically accurate. It contains exhaustive references. Although we do not agree with every statement or conclusion, we feel this book is filled with valuable understanding of reading.

2. Title: McIntyre, Curtis W.; Pickering, Joyce S. eds. *Clinical Studies of Multisensory Language Education for Students with Dyslexia and Related Disorders*. Salem, OR: International Multisensory Structured Language Education Council, 1995.

Comments: This book contains numerous studies of multisensory structured phonics methods, and it provides clear evidence that multisensory structured phonics is very effective as a means of remediating students with dyslexia or learning differences. The Stevenson Program is **not** included in these studies (and Stevenson is not a member of IMSLEC), but Stevenson uses multisensory instruction extensively. (For less formal studies that are focused on the Stevenson program, see the Test Score Section of this Background information folder.)

3. Title: Groff, Patrick. *Preventing Reading Failure: An Examination of the Myths of Reading Instruction*. Portland, OR: National Book Company, 1987.

Comments: This book is not exceptionally well known, but it contains some wonderful discussion about certain assumptions behind reading instruction that turn out to be false. These assumptions still permeate many basal reading methods today. This book also contains numerous research references.

4. Title: Ellis, William, Ed. *All Language and the Creation of Literacy*. Baltimore, MD: The Orton Dyslexia Society, 1991.

Comments: This booklet is a series of essays by different educators that are focused around the debate between phonics instruction and Whole Language or Literature Based Instruction. It contains some well written arguments on both sides and excellent references. It is more technical than the previous books. It was published by the organization that is now named the International Dyslexia Association.

5. Title: Lyon, G. Reid; Gray, David B.; Kavanaugh, James F.; Krasnegor, Norman A. *Better Understanding Learning Disabilities: New Views from Research and Their Implications for Education and Public Policies*. Baltimore, MD: Paul H, Brooks Publishing Co., 1993.

Comments: This book is much more about public policy than about reading methodology. It is also quite technical in many places. But it provides a perspective on the way research is being viewed and used in education.

Articles:

1. Title: Stephenson, Frank; Reynolds, Andi. *The Phonics Revival*. Academic Language Therapy Association Website, www.altaread.org/resources/article5.shtml

Comments: A good summary of current research and conclusions about the importance of phonemic awareness and phonics instruction.

2. Title: Grossen, Bonita. *A Synthesis of Research on Reading from the National Institute of Child Health and Human Development*. The National Right to Read Foundation Website, www.nrrf.org/synthesis_research.htm.

Comments: A good summary of the research from the NICHD to which we referred under the title "Recent Government Guidelines."

3. Title: Torgeson, Joseph K. *Research on the Prevention and Remediation of Phonologically Based Reading Disabilities*. Academic Language Therapy Association Website, www.altaread.org/resouces/articles/article3.shtml

Comments: A brief article by one of the leaders in the field demonstrating the importance of phonological and phonemic awareness and phonics instruction. (Many more detailed studies of similar phenomenon have been done.)

4. Title: Torgeson, Joseph K. *Catch Them Before They Fall: Identification and Assessment to Prevent Reading Failure in Young Children*. American Educator. Spring/Summer 1998.

Comments: A good, easily comprehensible article on the importance of early intervention. It discusses many aspects of reading development but also points out the key role played by phonological processing, and thus the need to develop phonemic awareness.

5. Title: Byrne, Brian; Fielding-Barnsley, Ruth. *Acquiring the Alphabetic Principle: A Case for Teaching Recognition of Phoneme Identity*. Journal of Educational Psychology. 1990. Vol 82 No. 4, 805-812.

Comments: A highly technical article that helps establish the importance of teaching phonemic awareness and phonics.

6. Title: Foorman, Barbara R.; Francis, David J; Novy, David M.; Liberman, Dov. *How Letter-Sound Instruction Mediates Progress in First-Grade Reading and Spelling*. Journal of Educational Psychology. 1991. Vol 83 No. 4, 456-469.

Comments: Another highly technical article that helps establish the importance of teaching phonemic awareness and phonics.

7. Francis, David J.; Shaywitz, Sally E.; Stuebing, Karla K.; Shaywitz, Bennet A. *Developmental Lag versus Deficit Models of Reading Disability: A Longitudinal, Individual Growth Curves Analysis*. Journal of Educational Psychology. 1996. Vol. 88 No. 1, 3-17.

Comments: Another highly technical article that does not directly relate to the importance of developing phonemic awareness or using phonics instruction. It does, however, provide the conceptual foundation required for recognizing phonological deficits as an important factor in reading difficulties.

Texas Guidelines for Instructing Dyslexic Students

This section is not only for Texas educators. It refers to some important qualities of instruction used to assist any dyslexic student. In many parts of the country, dyslexia is considered to be one of several learning disabilities or learning disorders. Students identified as dyslexic are often managed through special education departments. In Texas, dyslexia is given a special designation and students who are identified as dyslexic are often taught in general education, as well as in special education. The Texas Education Agency has created detailed guidelines, based on research, that programs for dyslexic students should meet. These guidelines include components of instruction. **The Stevenson Program provides these components.** The following is taken directly from the Dyslexia Handbook (February 2001) produced by the Texas Education Agency:

"Components of instruction, as appropriate for the reading needs of the student, include:

- Phonemic awareness instruction that enables students to detect, segment, blend and manipulate sounds in spoken language;
- Graphophonemic knowledge (phonics) instruction that takes advantage of the letter-sound plan in which words that carry meaning are made of sounds and sounds are written with letters in the right order. Students with this understanding can blend sounds associated with letters into words and can separate words into component sounds for spelling and writing;
- Language structure instruction that encompasses morphology (the study of meaningful units of language such as prefixes, suffixes, and roots), semantics (ways that language conveys meaning), syntax (sentence structure), and pragmatics (how to use language in a particular context);
- Linguistic instruction directed toward proficiency and fluency with the patterns of language so that words and sentences are the carriers of meaning; and
- Process oriented instruction in the processes or strategies students use for decoding, encoding, word recognition, fluency, and comprehension that students need to become independent readers.

"Instructional approaches, as appropriate to meet the instructional needs of the student, include:

- Explicit, direct instruction that is systematic (structured), sequential, and cumulative. Instruction is organized and presented in a way that follows a logical sequential plan, fits the nature of language (alphabetic principle) with no assumption of prior skills or language knowledge, and maximizes student engagement. This instruction proceeds at a rate commensurate with students' needs, ability levels, and demonstration of progress;
- Individualized instruction that meets the specific learning needs of each individual student in a small group setting; a reading curriculum that matches each student's individual ability level and contains all of the *Components of Instruction* mandated in 19 TAC 74.28;
- Intensive, highly concentrated instruction that maximizes student engagement, uses specialized methods and materials, produces results, and contains all the *Components of Instruction* mandated in 19 TAC 74.28;

- Meaning-based instruction that is directed toward purposeful reading and writing, with an emphasis on comprehension and composition; and
- Multisensory instruction that incorporates the simultaneous use of two or more sensory pathways (auditory, visual, kinesthetic, tactile) during the teacher presentations and student practice."

Some of the characteristics mentioned above are more the responsibility of the educators than the curriculum. For example, individualized instruction and intensive instruction are heavily related to classroom management. The Stevenson Program, however, provides opportunities for this kind of teaching, and Stevenson Learning Skills provides information and training in ways of individualizing and concentrating instruction (even within groups). Although it may be obvious from some of the previous information how the Stevenson Language Skills Program meets some of the TEA criteria, Stevenson Learning Skills is producing a separate information piece which gives specific examples of how Stevenson relates to each descriptor of appropriate instruction for dyslexic children. You may wish to request this information piece.

Notes and Comments

Brain-Based Reading Research - The phrase "brain-based research" is sometimes used to denote research, based on neurological studies of our brains, that is focused on the human learning process. Science is discovering a great deal about the human brain, and some of this information may eventually revolutionize education. Unfortunately, people mean different things when they use the phrase "brain-based research" or "brain-based teaching methods." Some people are referring to the kind of research which we have already mentioned here about the relationship between phonological deficits and dyslexia. Other people are referring to the ways in which different parts of the brain process information (such as "right-brained learning" or "left-brained learning"), while still others are referring to the concept of multiple intelligences. There is also a great deal of disagreement within any group as to just how much we know about learning processes and how thorough the research is. At this point, there seem to be more models of learning processes than definitive data about them. Also, there is controversy about how specific teaching techniques affect specific learning processes. Therefore, we have avoided introducing the phrase "brain-based" heretofore in our discussion of research-related topics and the Stevenson Program. We do, however, feel that the Stevenson Program teaches phonics and comprehension in a way that engages certain brain functions that conventional reading programs do not. For example, it seems to us that Stevenson's use of visual images, not only enhances memory, it also engages processes that are often associated with "right-brain" or "figural" learning. On the other hand, we would not claim to know definitively the neurological workings of the learning processes involved, and we do not claim to have any scientific evidence of how Stevenson effects brain functions. We look forward to the day when the learning processes in the brain are better understood., and we would welcome anyone who would like to include our techniques in their brain-based research.

Brand Names and Research Articles in Refereed Journals - Most research articles on reading published in refereed journals do not specifically mention the names of the companies or

organizations that publish the instructional materials. There are several reasons for this. First and foremost, the research is meant to be objective and is not intended to promote any particular product. It is also likely that the technique or strategy being studied does not belong solely to one product, so that the researchers may be testing, for example, the effectiveness of direct instruction as opposed to a self-discovery approach. There are many different reading programs that use direct instruction and the particular study may involve some combination of products or some similar strategies that the researchers devised themselves. Most of the studies that affirm the effectiveness of a given company's or organization's products or services (including the Stevenson Program) are published by the company or organization that produces the program (or sponsors the service.) This fact does not necessarily make these studies invalid or suspect. It does mean, however, that most "scientific" or "objective" research that is found in journals will involve generic instructional strategies, procedures or techniques and not specific brand name products or services.

The Limits of Research - Research does not necessarily answer all of our questions about the best ways to teach reading. For example, Orton-Gillingham is an old, well-established method for teaching reading to students who are experiencing significant difficulty learning to read. Reading Recovery is a newer, but also well-known method for teaching reading, and it is also aimed at students who are having difficulty. If you browse various web sites to find lists of research-based reading methods, you will find both of these listed, **however**, these methods take dramatically different, and often conflicting, approaches. Reading Recovery will concede that it is not meant to help students who are "truly" dyslexic, while Orton-Gillingham specializes in such students. Unfortunately, many researchers cannot agree on which students are truly "dyslexic" until long after they have demonstrated difficulty learning to read. Can research determine which approach is more effective, and, if so, whose research? Stevenson obviously favors a more structured phonics approach, such as Orton-Gillingham, but O-G has its limits also. In any case, we do not expect research to end the academic arguments anytime in the near future. So we encourage educators and parents alike to pay attention to their own intuitions about which methods work and which don't. It might be helpful if everyone involved with the student considers intervening early, exercises patience and keeps an open mind, while remaining committed to seeing positive results.

The Importance of Practical Experience - Although Stevenson meets most of the generally accepted criteria for being a research-based reading program, it is important to note that the Stevenson method originated from teaching **practice**, not research. Early in the development of her techniques, author Nancy Stevenson, became very aware of the professional literature on language development and language disorders through her colleague and mentor, William Redmond, a neuropsychiatrist (now deceased). Thus her work inevitably incorporated some ideas from learning research and theory. At the same time, however, she devised most of the core strategies and the essential mnemonic clues from her work as an old-fashioned teacher working with a wide variety of students who struggled to learn basic reading and language skills. Only teaching experience, not research, could spawn the concept of crunchy butter and jelly sandwich words. Only the creative imagination of an experienced teacher could invent layer cake words and turn them into a complex sophisticated vocabulary by adding different frostings, decorations and doilies. And only an instinctive educator would try such unusual things - and keep trying - to help all students understand, process and remember that unique phenomenon that is the written English language.

¹ Fletcher, Jack M., Lyon, G. Reid, "Reading: A Research Based Approach" on the web, reprinted from "What's Gone Wrong in America's Classrooms" , edited by Williamson M. Evers, Hoover Institution Press, 1998
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² Rebecca Felton, from her presentation at the New England Branch of the International Dyslexia Association in Cambridge, MA in September 2000.

³ Higbee, Kenneth L., "Your Memory: How It Works and How to Improve It." First Edition, Englewood Cliffs, NJ: Prentice Hall, 1985. In the second edition, published by Marlowe & Company, Dr. Higbee uses different terminology.

⁴ Forness, S., Kavale, K., Blum, I., Lloyd, J., AMega-Analysis of Meta-Analyses≡ Teaching Exceptional Children, July/August 1997



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