PEER-REVIEWED RESEARCH

IDEA04 requires that IEP teams base special education, related services, and supplementary aids and services on "peer-reviewed" or "scientifically-based" research to the extent practicable. A publication is considered to be "peer-reviewed" if its articles go through an official editorial process that involves review and approval by the author's peers (people who are experts in the same subject area.) Most (but not all) scholarly publications are peer reviewed.

The following programs and practices are typically used when providing special education services to students with specific learning disabilities in Prince William County Public Schools. Summaries of the pertinent information with citations are included. These may be used when providing information to parents.

August 2006

INSTRUCTIONAL PROGRAMS

The Sopris-West Herman Reading Method

The Sopris-West Herman Reading Method is an Orton-Gillingham-based multi-sensory approach to teaching reading in small groups. The complete reading curriculum also teaches spelling and writing while providing the fundamental reading skill requirements outlined in the Reading First initiative that helps every child learn to read by the end of third grade:

- Phonemic Awareness
- Phonics
- Fluency
- Vocabulary
- Comprehension

Used in more than 1800 schools across the nation, the Sopris-West Herman Reading Method has been successful with inner city, ESL and LD students for over 25 years. The Sopris-West Herman Reading Method is an approach to help students compensate for their visual or auditory processing problems. Students are taught the complete range of reading skills and achieve reading competency upon completion of the program. They master twenty levels of instruction, each with a spelling and handwriting component.

www.sopriswest.com

Wilson Reading System:

The Wilson Reading System was developed by Barbara Wilson in 1988 and is based on the Orton-Gillingham philosophy and phonological coding research. Barbara taught dyslexic students for five years at the Massachusetts General Hospital from 1983-88. From this she developed the Wilson Reading System, a 12-step reading and writing program It is a structured language program that incorporates a multisensory approach, direct instruction, diagnostic and continuous assessment of student needs, and is systematic. It directly teaches the structure of words in the English language so students master a coding system for reading and spelling. It also teaches sight word instruction, vocabulary, oral expressive language development and comprehension. The sequence in steps 1-6 is based on six common syllable types and sounds that are based on these syllables. Steps 7-12 provide options and rules for adding suffixes for changing word bases. It was originally written for older students and adults but has been successfully used with ESOL students, those with gaps in their decoding abilities and students who have been unsuccessful with other reading programs.

Banks, S.R., Guyer, B.P. and Guyer, K.E. 1993. Spelling Improvements by College Students Who are Dyslexic. Annals of Dyslexia. 43: 186-93. A Study at Marshall University determined that Wilson spelling most effective program with college students with a learning disability.

Cognitive Reading Strategies:

Cognitive Reading Strategies is a reading, writing and spelling program which was written and developed by Dr. Kathleen Thompson. The program incorporates all learning styles and is multi-sensory as material is always presented auditorily, visually and kinesthetically. Students receive Direct Instruction in: phonics, comprehension skills and writing. Goals are linked to the Virginia State Standards and the individual components in the program have been linked to the *Put Reading First Initiative.* Research reviewed by the Learning Disabilities Association of America states, "Students with learning disabilities need a multi-sensory phonics approach, with instruction in phonological awareness; some students need a more meaning-based approach; while other students need interventions to address comprehension problems. For many students a combination of approaches is effective (Learning Disabilities Association, 2001). Cognitive Reading Strategies is a combination of all the strategies mentioned by the Learning Disabilities Association.

Armbruster, B. , Lehr, F. & Osborn, J. (2001). Put Reading First. The research building blocks for teaching children to read. Retrieved October 4, 2005 from NIFL Pulblications Page. Website: http://www.nifl.gov/partnershipforreading/publications/reading_first1.html

Collins, Vicki., Dickson, Shirley., & Kameenui, Edward. (n.d.) Metacognition and Its Relation to Reading Comprehension: A Synthesis of Research. Retrieved November 11,2005 from The National Center to Improve the Tools of Educators Web site: http://idea.uoregon.edu/~ncite/documents/techrep/tech23.html

Chard, D., & Osborn, J. (1999). Phonics and word recognition instruction in early reading programs: Guidelines for accessibility. Learning Disabilities Research & Practice. A Publication of the Division for Learning Disabilities, Council for Exceptional Children 14(2), 107-117. Retrieved November 8, 2005, from LD OnLine. Website: http://ldonline.org/ld_indepth/reading/ldrp_chard_guidelines.html.

Fielding, Linda. & Pearson, David. (1994) Synthesis of Research: Reading Comprehension: What Works. Educational Leadership, 51, 5. Retrieved November 28, 2005. Web site: http://www.ascd.org/video_guides/reading02/resources/reading2.html.

SRA – Direct Instruction Reading:

Corrective Reading is a Direct Instruction reading program that perhaps uses the largest variety of instructional techniques of any remedial reading program. Problem readers suffer from either decoding difficulties or comprehension difficulties or both. Project Follow Through (1968-76), the largest educational experiment in history and costing over one billion dollars, found Direct Instruction as the only model to have significant positive outcomes in basic skills, cognitive–conceptual measures and affective measures. The Direct Instruction (Siegfried Engelmann) approach of SRA uses explicit instruction rather than that using implicit learning (whole language). Explicit instruction in how segmentation and blending are involved in the reading process was superior to instruction that did not use explicit instruction to apply phonemic awareness (Cunningham, 1990). SRA also uses decodable texts where students can practice reading word patterns over and over again, which in turn helps the student develop fluency and automaticity. Corrective feedback is made immediately after every error. Students are constantly required to attend to the meaning of what they read through the use of interspersed questions. Pre-questions, interspersed questions and post-questions increase comprehension. (Watts & Anderson 1971). Throughout all of its program, SRA Corrective Reading uses a variety of strategies to teach vocabulary since vocabulary concept deficiencies are a primary cause of academic failure in grades 3-12. (Baumann & Kameenui, 1991). Corrective Reading can be used with a wide variety of students to include children with learning disabilities. Corrective Reading has produced dramatic improvements in reading performance for many different student populations. Most recently Dr. John W. Lloyd, Ph. D. of the University of Virginia, researched the research, meta-analyses, and found that Direct Instruction provided the largest "Effect Size" (.82), which means that DI had the largest effect on reading comprehension compared to other methods of teaching students to read. A Meta- Analysis of whole language resulted in an effect size of .09 (Stahl & Miller, 1989), or "one that is close to chance".

Results from the National Reading Panel (2000) Teaching Children to Read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction concluded that 1: a systematic phonological and phonemic awareness approach strongly relates to reading success, 2: systematic instruction of letter-sound correspondence as used in reading and spelling produced significant benefits for K-6 students and those that difficulty learning, and 3: teaching students a wide variety of reading comprehension techniques is the most effective way to improve comprehension.

Reading Mastery is another of SRA's Direct Instruction programs implementing this philosophy. Reading Mastery, also an explicit teacher-directed method, meets every recommendation required by the No Child Left Behind Act.

Kinder,D., Kubina, R., Marchand-Martella, N. (2005) Special Education and Direct Instruction: Ann Effective Combination, Vol 5 No. 1, 1-36.

Marchand-Martella,N. (2004). Introduction to Direct Instruction. Pearson Education, Inc.

Results with Reading Mastery, (2002) McGraw-Hill Education, American Federation of Teachers, & National Association of Elementary School Principals.

Results with Corrective Reading, (2003) McGraw-Hill Education, American Federation of Teachers, & National Association of Elementary School Principals.

Strategic Instruction Model (SIM) – University of Kansas:

The Strategic Instruction Model (SIM) was designed by researchers at the University of Kansas Center for Research on Learning. SIM is comprised of a variety of strategies and routines designed mainly for students who are at risk for failure. Strategic instruction enables all students to become independent learners and performers, including students with disabilities and students who are English language learners

A learning strategy is an individual's approach to a learning task. It includes how a person thinks and acts when planning, executing, and evaluating performance on the task and its outcomes. In short, learning strategy instruction focuses on how to learn and how to effectively use what has been learned.

A routine is designed to help teachers teach large amounts of content to academically diverse classes in learner-friendly ways. Use of a routine will improve the students' ability to organize, understand, and remember critical information.

www.ku-crl.org/sim

INSTRUCTIONAL PRACTICES

Testing Accommodations:

Testing accommodations refers to changes made in the administration of standardized tests that allow the student to demonstrate his/her knowledge without interference of the disability. Changes can be made in the setting, testing presentation, response format and timing. Testing accommodation have been proven effective for non-disabled peers as well as disabled peers; however, research present stronger increases on reading for students with disabilities. (Elliott and Kratochwill) Research notes that both the special education teacher and the regular education teacher play an important roll in determining accommodations for students. It is important for the special educator to understand the content of the general education curriculum and for the general educator to understand how accommodations allow students to access the curriculum. (Destafano, Shriner, Loyd 2001)

Bolt, S.E., Thurlow, M.L (2004) Five of the most frequently allowed testing accommodations in state policy: synthesis and research. *Remedial and Special Education, 22(4) 3-10.*

Destefano, L., Shriner, J.G., Lloyd, Clarie, L. (2001) Teacher decision making in participation of students with disabilities in a large scale assessment. *Exceptional Children. 68(1) 7-22.*

Elliott, S., Kratochwill, T. (2003*) How testing accommodations help.* Retrieved September 17, 2005, from Assessing on Assessing All web site:
http://www.wcer.wisc.edu/news/coverStories/testing_accommodations_help.php

Class Size:

Smaller classes offer teachers the chance to give more individualized attention to each student so as to maximize learning potential. Students with lower academic ability and those who are economically or socially disadvantaged have greater achievement gains when they are in smaller classes. In most cases, there are fewer discipline issues which results in less teacher stress and higher teacher morale. The STAR project, which was done in Tennessee, found that students achieve at a higher rate, graduate on time, complete more advanced math and English classes, and graduate with honors when they have experienced smaller classes. The recommended goal enrollment for a reading class for the early elementary grades should be 15:1 with even smaller numbers for students with exceptional needs. Teachers with lower class enrollments can spend more time and energy helping each child succeed.

Lewit, E.& Baker, L. (1997). Class Size. *Financing Schools,* 7(3), 112-121.
Resnick, L. (2003). Class Size: Counting Students Can Count. *Research Points: Essential Information for Educational Policy,* (1)1, 1-4.

Cooperative Learning:

Cooperative learning is 'working together to accomplish shared goals'. It refers mainly to small groups of students who work together to maximize learning. Research shows that students who have the opportunity to work collaboratively with others learn faster and more efficiently, have more positive feelings about their learning experience, and tend to have greater retention of information. Students take turns with different roles such as facilitator, reporter, recorder, etc. Every student is involved in the learning; each has a specific role, and the students work together to achieve success.

There are five essential components of cooperative learning: positive interdependence when group members believe that there are linked together in a way that one cannot succeed unless everyone succeeds, promotive interaction where students do face to face work together and promote and applaud each other's efforts, individual and group accountability where the group is responsible for achieving its goal and each member is accountable, interpersonal and small group skills where students engage concurrently in learning and functioning together, and group processing which is when group members discuss how well they are achieving their goal and maintaining effective working relationships. Cooperative learning is a way for students to develop interpersonal life-skills that will help them later in the workforce.

Johnson, D. W., & Johnson, R. T. (1989). *Cooperation and competition: Theory and research*. Edina, MN: Interaction Book Company.
Johnson, D. W., & Johnson, R. (1994). *The Nuts And Bolts Of Cooperative Learning*. Edina, MN: Interaction Book Company.
Johnson, D. W., & Johnson, R. (1996). *Meaningful And Manageable Assessment Through Cooperative Learning.* Edina, MN: Interaction Book Company.

Co-Teaching:

Co-teaching/Team teaching is an instructional technique that addresses the setting in which special education services are implemented to students. The practice allows for the regular education teacher and the special education teacher to combine their expertise within one classroom to serve the needs of all students. The regular education teachers contributes a "highly specialized" training in the content area and the special education teacher beings "in-depth knowledge" of individual learning. Both teachers are responsible for planning, delivering, and evaluating instruction. Although the setting is the regular education classroom, small group instruction should be within the norm. (Magiers, et. al, 2005) A commitment to this model requires that the special education teacher be present in the during the entire instruction process. (Zigmund & Magiera 2001)

Magiera, K., Smith, C., Zigmond, N., Gebauer, K. (2005) Benefits of co-teaching in secondary mathematics classes (2005) *TEACHING Exceptional Children* v. 37, n. 3

Mastropieri, M. A., Scruggs, T.E., Graetz, J., Norland, et. al (2005) Case studies in co-teaching in the content areas: successes, failures, and challenges. *Intervention in school and clinic.* 40(5) 260-271.

Zigmund, N., Magiera, K. (2001) A focus on co-teaching. (2005) Current Practice Alerts Retrieved October 5, 2005 from TeachingLD web site: http://www.dldcec.org/pdf/Alert6.pdf

Direct Instruction:

The term, direct instruction, (sometimes referred to as explicit instruction) describes a teacher-centered approach for providing effective instruction in basic or isolated skills. Typically, lessons are scripted and teachers use a step-by-step format which requires students to reach mastery before moving on. Research indicates that most, if not all of the components of direct/explicit instruction are essential for positive student outcomes (Hall, Tracey, 2005)

Direct Instruction (usually referred to a bi D, big I) comes from the work of Siegfried Engleman, a professor at the University of Oregon. Direct Instruction also uses scripted lessons and has published over 50 specific programs for teaching language, reading, writing, spelling mathematics and science. Direct Instruction was tested in **Project Follow Through**, a study conducted by the federal government to look at teaching procedures. In this study, Direct Instruction was the only model to show positive impact on cognitive skill development and was shown to raise achievement scores in basic skill areas.

Adams, G.L., & Engelmann, S. (1996). Research on Direct Instruction: 25 years beyond Distar. Seattle, WA: Educational Achievement Systems.

Bessellieu, F. & Kozloff, M.(2000). Direct instruction is developmentally appropriate. Retrieved October 6, 2005 from University of North Carolina at Wilmington. Web site: http://people.uncw.edu/kozloffm/didevelapp.html

Cowardin, J., Kozloff, M. & LaNunziata, L. (1999). Direct instruction in education. Retrieved November 8,2005, from University of North Carolina at Wilmington Web site: http://people.uncw.edu/kozloffm/diarticle.html

Formative Evaluation:

Formative evaluation refers to the ongoing collection and use of information to evaluate the effectiveness of instructional implementations. It may used to determine the appropriateness of a particular setting, intervention or curriculum used for students. Formative evaluation focuses on specific subskills mastery or general outcomes. The following four approaches are most prominent in current educational practices: curriculum-based assessment (CBI), curriculum-based measurement (CBM), portfolio assessment and performance assessment. (DLD, Current Practice Alerts)

Espin, C., Shin, J., Busch (2000) Current practice alerts: formative evaluation. Retrieved September, 2005 from TeachingLD web site: http;//www.dldcec.org/pdf/Alert3.pdf

Graphic Organizers:

Graphic Organizers refers to any visual representation of concepts that helps organize information in a manner that makes the information easier to learn. The instructional strategy can be used before instruction to elicit prior knowledge, during instruction to assist with conceptualization and after instruction to summarize or assess the instruction. (Anderson, et al). Graphic organizers can be used across curriculum areas.

Anderson, S., Yilmaz, O., Washburn-Moses, L. *(2004)* Middle and high school students with learning disabilities: practical academic interventions for general education. teachers- a review of the literature. *American Secondary Education* 32(2) p. 19-40.

Guided Notes:

Guided notes are a skeleton outline that lists the main points of a verbal presentation and provide designated empty spaces for students to complete to enhance on the main idea. (Weishaar & Boyle, 1999) The teacher prepares handouts that guide students through material with standard clues so that students are left to focus on key facts, concepts and relationships. Using guided notes, students retain more information in memory (Anderson, et al) and produce greater gains on tests. (Lazarus, 1991)

Anderson, S., Yilmaz, O., Washburn-Moses, L. *(2004)* Middle and high school students with learning disabilities: practical academic interventions for general education. teachers- a review of the literature. *American Secondary Education* 32(2) p. 19-40.

Weishaar, M.K., Boyle, J.R. (1999) Note-Taking Strategies for Students with Disabilities. *The Clearing House*. 72(6) p. 392 -395.

Inclusion:

Inclusion is a broad term used in reference to placing students with disabilities in the general education classroom to receive their education. It is also noted as a term that implies a commitment to educating every child. (unknown) The research about inclusion reveals reduced fears of individual differences with an increased comfort and awareness of others, a growth in student's social cognition, an improvement in self-concept of non-disabled peers, an increased ability to advocate and develop personal principles, and an increased ability to create friendships. (Kaufman, 2001). It is important to note the inclusion is not a just a special education issue, but it must involve participation from all stake holders. (unknown) Given that current special education legislation does require that every special education student be educated to the maximum extent possible with their nondisabled peers, the discussion about inclusion and the extent to which it will be practiced within school is integral to the program.

Choate, J.S. (1997) Successful inclusive teaching. Needham Heights, MA: Allyn & Bacon.
Friend, M (2005) Special educations: contemporary perspectives for school professionals. Pearson Education, Inc.

National Association of School Psychologist (n.d.) Position statement on inclusive programs for students with disabilities. Retreived September, 2005 from the National Association of School Psychologist web site: http://www.nasponline.org/information/pospaper_ipsd.html

Vaughn, S. Klinger. J.K. (1998) Students perceptions of inclusion and resource room settings. The Journal f Special Education, 32(2)

Burnett, J. (1996) Including students with disabilities in general education classrooms: from policy to proactive. Accessed on 11/10/2005 from SIRS Government Reporter via SIRS Knowledge Source http://www.sirs.com

Learning Strategies:

Learning strategies describe an individual's approach to completing a task or assignment, by organizing and using a specific set of skills in order to learn content. For a strategy to be useful, it has to be efficient and effective. Research has found that the use of learning strategies improves student performance in the classroom and in nonacademic settings. Strategies that are both effective and efficient share common characteristics such as: content, which refers to the steps and how they are designed to facilitate the learning process; design features, which describes how the steps are presented; and usefulness, which refers to the potential transferability of the strategy to a variety of settings. The most popular learning strategies were researched and developed at the University of Kansas, Center for Research on Learning.

Boudah, D. & O'Neill, K. (1999) *ERIC Clearinghouse on Disabilities and Gifted Education. ERIC/OSEP Digest E577.*

Deschler, D., Ellis, E., & Lenz, K. Teaching Adolescents with Learning Disabilities: Strategies and Methods. NY: Love Publishing Company, 1996.

Mnemonic Strategies:

Mnemonic strategies are systematic procedures for enhancing memory. In essence, it is an instructional strategy utilizes student's memory teaching students to link new information being taught to information that they already know. It includes verbal as well as visual cues. Mnemonic instruction is a researched and validated method with high incident disabilities and can be used across curriculums. Students who have learned effective mnemonics instruction increased his/her comprehension and are able to recall more attributes on assessments. Examples of different categories for mnemonics devices include illustrations and word-based devices (i.e. keyword, pegword, acronym

Anderson, S., Yilmaz, O., Washburn-Moses, L. *(2004)* Middle and high school students with learning disabilities: practical academic interventions for general education. teachers- a review of the literature. *American Secondary Education* 32(2) p. 19-40.

The Access Center (2004) Using mnemonic instruction to facilitate access to the general E-education curriculum. Retrieved September 30, 2005 from The Access Center web site: http://www.k8accesscenter.org/training_resources/Mnemonics.asp

Ehren, B. J. (2000). Mnemonic devices (Module IV, Lesson 1). In B. J. Ehren (Ed.), Building background knowledge for reading comprehension [Online]. Lawrence, KS: The University of Kansas, Center for Research on Learning. Available: Onlineacademy.org

Mastropieri, M.A, Scruggs, T.E. (1998) Enhancing school success with Mnemonic Strategies. Retreived October, 7, 2005 from LdOnline: http://www.ldonline.org/ld_indepth/teaching_techniques/mnemonic_strategies.html

Uberti, H.Z., Scruggs, T.F., Mastropieri, M.A. (2003) Keywords make the difference!: mnemonic instruction in inclusive classrooms. *Teaching Exceptional Children* 35(3) p. 56-62.

Peer Tutoring:

Peer tutoring refers to interclass peer-mediated instruction that uses behavioral techniques to promote the acquisition of academic and social behavior. (Anderson, et al) Most commonly students are partnered in pairs or groups with a combination of high achieving students with lower achieving students or students of comparable achievement. Research has noted peer tutoring increases academic success for students with and without disabilities. Often students who struggle to understand concepts taught by the teachers, may learn better from their peers. Peer tutoring increases students academic engagement, improving motivation and persistence. Peer tutoring is an effective instructional method that can be used across a variety of ages, grades, subject areas and setting. (Maheady, et. al)

Copeland, S. R., Hughes, C., Carter, E.W. Guth, C., Presley, J.A., Williams, C.R, Fowler, S. E. (2004) Increasing access to general education: perspectives in high school peer support program. *Remedial and Special Education.* 25(6) pg. 342-353.

Anderson, S., Yilmaz, O., Washburn-Moses, L. *(2004)* Middle and high school students with learning disabilities: practical academic interventions for general education. teachers- a review of the literature. *American Secondary Education* 32(2) p. 19-40.

The Access Center. Using Peer Tutoring to Facilitate Access (n.d.) Retrieved October 1, 2006 from The Access Center web site: http://www.k8accesscenter.org/training_resources/documents/PeerTutoringFinal.pdf

Larry Maheady, Gregory Harper, Barbara Mallette, (2003) A focus on class wide peer tutoring. http://www.dldcec.org/pdf/PeerTutoring_rev1.pdf

Phonics Instruction:

"Phonics is not a process of letter-sound associations; instead, it is the process of examining the within-word context of letter(s), and then associating the sound that should be ascribed to the letter(s) as dictated by that word within-word context" (Kibby&Dechert,n.d.). There used to be debate on whether phonics should be taught but the issue is no longer if it should be taught but how should it be done. Phonics needs to be taught early in a student's academic career both explicitly and implicitly. "The greatest improvements were seen from systematic phonics instruction. This phonics instruction consists of teaching a planned sequence of phonics elements, rather than highlighting elements as they happen to appear in text." (Langenberg, 2000) Research on student's with Learning Disabilities states, "If these same students have received both intensive and explicit phonics-based instruction at the earliest indications of their disability, most of them would be able to read at or near their grade levels (Stephenson& Reynolds, 1998&1999).

Chard, D., & Osborn, J. (1999). Phonics and word recognition instruction in early reading programs: Guidelines for accessibility. Learning Disabilities Research & Practice A Publication of the Division for Learning Disabilities, Council for Exceptional Children 14(2), 107-117. Retrieved November 8, 2005, from LD OnLine. Website: http://ldonline.org/ld_indepth/reading/ldrp_chard_guidelines.html.

Hancock, L., & Wingert, P. (1996). If you can read this… you learned phonics. Or so its supporters say. Newsweek. Website: http://www.childdevelopmentinfo.com/learning/phonics.shtml

Juel, C., & Minden-Cupp, C. (2000). Learning to read words: Linguistic units and instructional strategies. Reading Reasearch Quarterly, 35, 458-492. Langenberg, D.N. (2000, April 13). Findings of the National Reading Panel. Testimony before the U.S. Senate Appropriateions Committee's. Website: http://www.readingrockets.org/article.php?ID=254

National Reading Panel (2000). Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction: Reports of the subgroups (National Institute of Health Pub. No. 00-4754). Washington, DC: National Institute of Child Health and Development.

Stephenson,F.,& Reynolds, A., (1998/1999). The phonics revival. Health &Biomedical Research Issue.Retrieved November 8, 2005. Website: http://www.reseach.fsu.edu/researchr/fallwinter9899/features/phonics.html

Ten years of brain imaging research shows the brain reads sound by sound. Retrieved November 8, 2005, from Child Development Institute. Website: http://www.childdevelopmentinfo.com/learning/brain.shtml