Scientifically Based Research vs. Evidence Based Practices and Instruction

Scientifically based research is a method for conducting research that ensures the research involves rigorous, systematic, and objective procedures to obtain reliable and valid knowledge. In order for an educational practice or instructional practice to be evidence based it must be evaluated using scientifically based research.

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Scientifically Based Research
In NCLB scientifically based research is defined as research [2]& [3]:
*	Employs systematic, empirical methods that draw on observation or experiment
*	Involves rigorous data analyses that are adequate to test the stated hypothesis and justify the general conclusion
*	Relies on measurement or observational methods that provide valid data across evaluators and observers, and across multiple measurements and observations
*	Is accepted by a peer-reviewed or a panel of independent experts through comparatively rigorous, objective and scientific review

To recognize scientifically based research ask yourself 1& [4]:
*	Has the study been published in a peer-reviewed journal or by a panel of independent experts?
*	Have the results of the study been replicated by other scientists?
*	Is there consensus in the research community that the study's findings are supported by a critical mass of additional research?

Resources for scientifically based research can be found at:
*	Technical Assistance Alliance for Parent Centers: http://www.taalliance.org/resources/Research.asp
*	The Center for Comprehensive School Reform and Improvement:
	http://www.centerforcsri.org/index.php?option=com_content&task=view&id=204&Itemid=5
*	What Works Clearinghouse: http://ies.ed.gov/ncee/wwc/
*	The Access Center: http://www.k8accesscenter.org/training_resources/reasearchapproach.asp

Evidence Based Practice and Instruction
A program or instructional practice that is evidence based has gone through rigorous research and has demonstrated a record of success; there is reliable, trustworthy and valid evidence to suggest the program is effective. [5] The evidence supporting these practices or instruction should be scientifically based research. [6]

Other common labels [7]:
-Exemplary Programs
-Effective Programs/Instruction
-Model Programs
-Proven Programs
-Science/Research-based
-"What Works"

Level of Research Evidence Continuum [8] Emerging Practices Promising Practice Evidence-Based Practices
Includes practices that are not based on research or theory and on which original data have not been collected, but for which anecdotal evidence and professional wisdom exists. These include practices that practitioners have tried and feel are effective and new practices or programs that have not yet been researched.

Includes practices that were developed based on theory or research, but for which an insufficient amount of original data have been collected to determine the effectiveness of the practices. Practices in this category may have been studied, but not using the most rigorous study designs. If a study uses a weak design (e.g., one-group pretest posttest) resulting evidence will be categorized as promising. If original data have been collected and a strong design has been used but the study uses a sample based on a different student population, we will note this and consider the practice promising with the special education population, but also that these practices need systematic study with students with disabilities.

Includes practices for which original data have been collected to determine the effectiveness of the practice for students with disabilities. The research utilizes scientifically based rigorous research designs (i.e., randomized controlled trials, regression discontinuity designs, quasi-experiments, single subject, and qualitative research). Other less rigorous research designs may be included depending on how they compare to the Council for Exceptional Children (CEC) quality indicators.

Evidence-based practices example: A meta-analysis of research from 10 randomized-control trials focused on a particular program to calculate and synthesize effect sizes. The results show, statistically, that kindergarten and first grade students who were exposed to the program have significantly better outcomes than similar students in similar settings who did not use the program.

Promising Practices example: An author publishes a summary of research findings from the last five years that focus on a particular policy for elementary-aged special education students. The author examined some studies that used a simple one-group pre/post-test design, and some with quasi-experimental designs. The author found that the policy studied resulted in generally positive outcomes and therefore, recommended that the policy be implemented, but noted the absence of rigorous research supporting the policy.

Emerging Practices example: Four middle school teachers share what strategies have worked for them in instructing students that are diagnosed with attention-deficit disorders. They feel that these strategies help to improve student performance. The teachers decide to document the strategies and disseminate them to all teachers in the school. The teachers have their own anecdotal evidence supporting the practices, and have a lot of experience in implementing the strategies. However, the strategies have not been assessed using rigorous experimental procedures; therefore, it is difficult to determine whether the strategies used by the teachers resulted in improved student performance, or some other variable(s) impacted their performance.

Examples of Evidence Based Programs and Instruction: [9] -Reading First -Response to Intervention -Positive Behavior Interventions and Supports -Functional Behavior Assessment -"Early Intervention in Reading" (beginning reading alphabet) -"Reading Recovery" (beginning reading alphabet) -Check & Connect (Drop out prevention) - "Ladders to Literacy" (beginning reading fluency) -"Literacy Express" (early childhood oral language)
- Reading Mastery / SRA / McGraw-Hill (ELL reading) -"Fast For Word® Language" (ELL English development)

Where to find evidence-based interventions:
-The What Works Clearinghouse (U.S. Department of Education): http://ies.ed.gov/ncee/wwc/
-Social Programs That Work: www.evidencebaedprograms.org
-Center for Effective Collaboration and Practice: http://cecp.air.org
-The International Campbell Collaboration: www.campbellcollaboration.org

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[1] Grover Whitehurst, U.S. Department of Education, Asst. Secretary, Educational Research and Improvement. Retrieved 8/4/08 from http://www.umass.edu/schoolcounseling/PPTs/EBP_Introduction.ppt
[2] National Institute for Literacy (2005). "Using Research and Reason in Education: What is Scientifically Based Research? A Guide for Teachers" Retrieved August 1, 2008 from http://www.nifl.gov/partnershipforreading/publications/html/science/stanovich.html
[3] The Elementary and Secondary Education Act [34 CFR 300.35] [20 U.S.C. 1411(e)(2)(C)(xi)] [sec. 9101(37) of the ESEA]
[4] Raudenbush, Stephen. (2002). "Identifying Scientifically Based Research in Education" Retrieved August 1, 2008 from http://wwwpersonal.umich.edu/~rauden/ScientificallyBased%20ResearchSeminar.pdf
[5] International Reading Association www.reading.org "What is Evidence Based Reading Instruction?"
[6] Hood, International Reading Association
[7] Monroe County, NY Youth Bureau "Linking Research with Practice in Youth Development" http://www.monroecounty.gov/youth-index.php
[8] The Access Center. Retrieved 8-4-08 from http://www.k8accesscenter.org/training_resources/reasearchapproach.asp#top
[9] U.S. Department of Education "What Works Clearinghouse" http://ies.ed.gov/ncee/wwc/reports/