

The Research to Practice Gap: What Science Offers Teachers of Reading

Jeffrey L. Black, M.D.

Medical Director

Luke Waites Center for Dyslexia and Learning Disorders

jeff.black@tsrh.org

The Research to Practice Gap:
What Science Offers Teachers
of Reading

Jeffrey L. Black, M.D.
Medical Director
Luke Waites Center for Dyslexia and Learning Disorders
jeff.black@tsrh.org



At the end of this activity, participants
will be able to....

- determine what constitutes adequate evidence,
- list resources educators can use to make informed decisions about the strength of evidence for an educational practice, and
- develop a plan to provide research proven instruction.

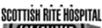


Why Scientific Research?

Research is the only defensible foundation for educational practice

It is the law – NCLB (2001), ESSA (2016) and IDEA (2004)

Scientifically Based Reading Research (SBRR)



Terms for Research Supported Reading Programs

Scientifically-based (SBRR)	Components supported by effectiveness studies
Evidence-based	Program supported by effectiveness studies

Reid Lyon, personal communication, 2012



Key Components of Instruction Established by Scientifically Based Reading Research (SBRR)

THE BIG FIVE

- 1 Phonemic awareness
- 2 Phonics
- 3 Fluency
- 4 Vocabulary
- 5 Comprehension



National Reading Panel Report (2000)



Instruction for Students with Dyslexia Needs to be Intensive

- Longer (sessions, duration)
- Individualized (targeting reading subskills)
- Small group (≤ 6 , 1:1)
- Qualified teachers (language structure, supervised practice)



Evidence of the
Research to Practice Gap

Extensive search of research literature between
1980 – 2005 for LD classroom observation
studies found little to no explicit instruction in
phonics and comprehension strategies, whole
class groupings and no sign of change.

Swanson (2008) 31:115 LD Quarterly



The Gap Persists

There continues to be disconnect between
what is known about scientifically based
reading instruction and the instruction
that typically occurs in the classroom.

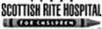
Lyon and Weiser (2013)
Handbook of Learning Disabilities



National Council on Teacher Quality:
Teacher Prep Review 2014

Seventeen percent of 959 elementary and
special education programs cover the NRP
Big Five adequately (two lectures and an
assignment)

www.nctq.org



Origins of Research to Practice Gap

- 19th century debate over alphabetic or sight word memory approaches
- Instruction and materials based on the premise that reading is a natural process
- Look-say, whole language, balanced



Observations (anecdotes) of American Reading Instruction 

Teach children the 44 sounds of English and how they are spelled. Then they can sound out each word.....and read it off the page.

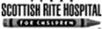
Why Johnny Can't Read
Rudolph Flesch, 1955



Consensus Definition 

“Specific Developmental Dyslexia. A disorder manifested by difficulty in learning to read despite conventional instruction, adequate intelligence, and socio-cultural opportunity. It is dependent upon fundamental cognitive disabilities which are frequently of constitutional disorder.”

World Federation of Neurology at Texas
Scottish Rite Hospital for Children, 1968



DTP: Comparison Group Study of Two Year Intervention

- Elementary age (11 yo, grade 4+)
- 22 DTP at Scottish Rite (12 video, 10 teacher) or 26 limited phonics at school
- Matched by age, grade, IQ¹, word recognition², attention³, rapid naming⁴, verbal short term memory⁵, visual short term memory⁶
- Gains made by video and teacher DTP were comparable
- DTP group gains in word recognition², non word reading³ and reading comprehension⁸ were greater than controls (**p < .005, .005, .05**)

1 WISC-R 3 CPT 5 MALT 7 DST
 2 WRAT-R 4 RAST 6 BVRT 8 GM

Oakland et al. (1998) Journal of Learning Disabilities, 31, 140-147.



DTP in the National Reading Panel Report (2000)

DTP Comparison Group Study (Oakland et al 1998) met criteria for inclusion in the **meta-analysis of experimental or quasi-experimental** reading intervention studies that was basis of evidence-based requirements of No Child Left Behind (2001) and IDEA (2004)

Effect sizes on post tests were among the largest for word identification (0.71), decoding (0.61) and comprehension (0.62).

NICHD (2000). Report of the National Reading Panel. Teaching children to read: an evidence-based assessment of the scientific research literature and its implications for reading instruction. (NIH Pub. No. 00-4769). Washington, D.C.: US Govt Printing Office.

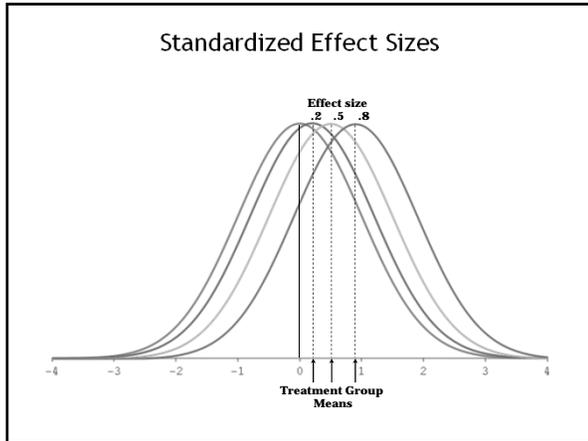


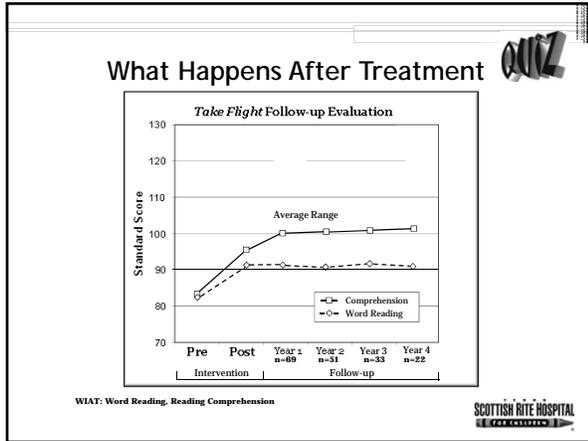
Effect Size and Change in Posttest Percentile and Standard Score in Experimental Group Relative to Control Group

Effect ^a	Effect Size	Percentile Change	Control Group Posttest	
			SS ₈₅	SS ₁₀₀
Small	.2	8	89	102
Medium	.5	19	94	107
Large	.8	29	98	112

Note: Tabled values referenced to control group posttest average.
^aCohen, 1988







EVIDENCE-BASED EDUCATION (EBE)

Merger of Empirical Evidence and Professional Wisdom

- Origins in evidence-based medicine
- Incorporates scientifically-based practices
- Clinician/educator customizes intervention/instruction to conform to needs of individual students
- Uses objective measures to assess outcomes, compare practices, adjust plans and programs

Adapted from: Whitehurst (2002) USDOE conference presentation and manuscript in preparation by Lyon and Weiner (2012)

SCOTTISH RITE HOSPITAL
A CHRISTIAN HEALTHCARE ORGANIZATION

Different Questions - Different Methods

Magnitude: How effective is it?	Meta-analysis
Mechanism: How does it work?	Randomized control trial (RCT)
Causation: Does it work?	RCT and Quasi-experiments

SCOTTISH RITE HOSPITAL
1100 EAST COLLETTA DR
DENVER, CO 80202

Different Questions - Different Methods

Description: What's happening?	Non-experimental studies
Advice: What do experts think?	Consensus report
Opinion: What is my experience?	Anecdote

SCOTTISH RITE HOSPITAL
1100 EAST COLLETTA DR
DENVER, CO 80202

Level of Evidence for Studies of Treatment Efficacy

1. meta-analysis of >1 RCT
2. RCT
3. quasi-experimental study (controlled without randomization)
4. non-experimental study (pre-post without control group or randomization)
5. committee or consensus conf. report, clinical experience of respected experts
6. unsystematic clinical observations (anecdotes)

Adapted from ASHA (2004) technical report
www.asha.org/members/deskref-journals/deskref/default

SCOTTISH RITE HOSPITAL
1100 EAST COLLETTA DR
DENVER, CO 80202

Systematic Reviews

- Meta-analysis component produces information about the magnitude of the intervention effect
- Quality of each RCT is assessed
- Recommendation for clinical care and research
- Should be regularly updated
- Produced by academic, government-supported and non-profit organizations

J Can Acad Child Adolesc Psychiatry, 20:1, Feb. 2011



Challenges in Teacher Training and Educational Practice: Barriers to Classroom Use of Reading Research

- Most education schools are not teaching all the components ("big five") of the science of reading.
- Phonics is taught more frequently by schools than other components, i.e. the barrier is not resistance to phonics but to science.
- Textbooks used to train teachers are often lacking in the five components and emphasize implicit learning through exposure to literature.
- State exams for teacher licensure usually do not measure research-based knowledge about reading.

Journal of Learning Disabilities, Vol. 42, No. 5, 2009



Challenges in Teacher Training and Educational Practice: General Barriers to Classroom Use of Research

- Teachers cite difficulty gaining access to research literature.
- Teachers have limited time to decipher research findings.
- Educators often lack skills to interpret research results.



Intervention in School and Clinic, Vol. 34, 1999



Evidence That Teacher Preparation Matters

- Teacher educators who do not possess an understanding of basic language constructs (e.g. phonology, phonics, morphology) do not prepare teacher candidates with an understanding of these constructs.
Scientific Studies of Reading, Vol. 16, No.6, 2012
- Student word reading growth is predicted by teacher knowledge (language/literacy concepts) and the amount of explicit instruction (decoding) the student receives.
Scientific Studies of Reading, Vol. 13, No.3, 2009



Read Books About Applying Research to Teaching

The Voice of Evidence in Reading Research (2009)
Reading Research in Action (2008)
P. McCardle et al

www.brookespublishing.com



Become Familiar with the Principles of Scientific Method and How to Recognize Effective Research

Search for
What is Scientifically Based Research?
A Guide for Teachers
at
<http://www.eric.ed.gov/PDFS/ED496349.pdf>



Fundamental Principles of Scientific Research

There is a link to relevant theory and previous research.

Question(s) to be studied is clearly stated and can be empirically investigated.

Methods used permit direct testing of the questions.

Coherent and explicit chain of reasoning is provided.

Results are published for peer review.

There is replication and generalization across studies.

National Research Council, 2002



Read Peer-Reviewed Reading Research Journals

- Journal of Educational Psychology
- Journal of Learning Disabilities
- Learning Disabilities Research and Practice
- Reading Research Quarterly
- Scientific Studies of Reading
- The Reading Teacher



Use Internet to Keep Informed About Reading Research News

Reading Rockets

<http://www.readingrockets.org>



Use Guidelines to Help Evaluate
Research Reports

**USDOE-IES: Identifying and Implementing
Educational Practices Supported by
Rigorous Evidence**

www.ed.gov/about/offices/list/ies/news.html#guide



Treating the Core Deficits of
Developmental Dyslexia:
Evidence of Transfer of Learning After
Phonologically- and Strategy-Based
Reading Training Programs

Maureen W. Lovett, Susan L. Borden, Teresa
DeLuca, Lea Lacerenza, Nancy J. Benson, and
Demaris Brackstone

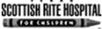
Developmental Psychology (1994) Vol. 30, No. 6, 805-822
Copyright 1994 by the American Psychological Association, Inc.
Reprinted with permission.



Author

Maureen Lovett

The Hospital for Sick Children and
Departments of Psychological and Pediatrics,
University of Toronto



Publication

Developmental Psychology
www.apa.org

Received October 25, 1993
Revision received April 18, 1994
Accepted April 18, 1994



Aim

In the present study, we address the question of whether children with severe reading disabilities can acquire and apply systematic spelling-to-sound knowledge and experience greater transfer of learning after reading remediation.



References

#72, with 6 by authors



Subject Assignment

Children were **randomly assigned** to a treatment condition and to a particular teacher.



SCOTTISH RITE HOSPITAL
A CHILDS LIFE COMPANY

Participant Characteristics

Referred from metro Toronto schools, parents and hospital staff for remedial reading instruction

WISC-R VIQ and PIQ ≥ 85 (\bar{x} VIQ 92, \bar{x} PIQ 101)

Conners P-T Q exclude significant inattention/hyperactivity

Score < 25 percentile on 4/5 reading tests

43 boys, 19 girls, 7-13 years old (\bar{x} 9.6)

Majority middle SES

Ethnicity not given

SCOTTISH RITE HOSPITAL
A CHILDS LIFE COMPANY

Setting

Learning Disabilities Research Program at HSC

Instruction in pairs in special lab classrooms at HSC or local schools

“Special education teachers” – general experience, specific preparation unspecified

SCOTTISH RITE HOSPITAL
A CHILDS LIFE COMPANY

Intervention

Two intensive experimental programs to improve decoding and reading vocabulary

PHAB/DI: phonologically-based (Engelmann-Reading Mastery)

WIST: metacognitive strategy-based (Gaskins-Benchmark)

One treatment control (**Hawthorne effects**): (CSS) Classroom Survival Skills

All received 35 sixty-minute sessions conducted 4 times/week

No report of monitoring **treatment fidelity**

Other remedial work "appeared randomly distributed" across three groups



Data Collection

Three types of pre-post outcome measures

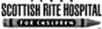
1. Training: PHAB/DI and WIST content for word and letter-sound accuracy.
2. **Transfer-of-Learning**: test of transfer words, challenge words, regular and exception-not taught words, GFW and WRMT-R nonwords, strategy test.
3. **Standardized**: GFW phonological measures, WRAT-R and WRMT-R word id, WRMT-R passage comprehension, WRAT-R, PIAT-R, GFW spelling, WRAT-R arithmetic, Piers-Harris self esteem

No mention if examiners were aware of treatment group.



Data Analysis

Statistical tests were used that could analyze differences between treatment and control groups on multiple outcomes while controlling for influences other than group.



Outcomes

Outcomes on training, transfer and standardized measures were clearly described and presented in tables showing pre-post means, **standard deviations**, effect sizes and tests of statistical significance.

SCOTTISH RITE HOSPITAL
A CHRISTIAN HEALTHCARE ORGANIZATION

Outcomes

PHAB/DI subjects were superior at post-test on measures of word analysis and blending real and non word reading. WIST subjects used more decoding strategies and out performed the control group. No group improved in spelling real words.

SCOTTISH RITE HOSPITAL
A CHRISTIAN HEALTHCARE ORGANIZATION

Interpretation

Sizable gains were made in word identification and word attack skills.

Sizable **transfer**-of-learning effects were observed after both WIST and PHAB/DI.

SCOTTISH RITE HOSPITAL
A CHRISTIAN HEALTHCARE ORGANIZATION

Limitations/Shortcomings

Speech- and print-based phonological processing deficits were not completely ameliorated after a short-term program.



Implications

Effective reading instruction for children with reading disabilities would include explicit strategy instruction, specific skills training focusing on core deficits areas and sufficient opportunities for massed practice and cumulative review.



Search Electronic Databases Working Backward From Recent Dates

Educational Resources Information Center (ERIC)
<http://www.eric.ed.gov/>



Harvard Online Library Information System (HOLLIS):
<http://hcl.harvard.edu/research/guides/hollis/>



Visit Web-based Resources for Information about Evidence-Based Educational Practices

What Works Clearinghouse (WWC)
<http://ies.ed.gov/ncee/wwc/>



Center on Instruction (COI)
www.centeroninstruction.org



Teaching LD Alerts
www.teachingld.org/alerts

National Center on Intensive Intervention
www.intensiveintervention.org



Use ASHA Evidence-Based Practice Resources

www.asha.org/slp/evaluate.htm



Links to relevant sections of the ASHA website



Use Web-based Resources to Evaluate Reading Interventions

A Consumer's Guide to Evaluating a Core Reading Program
www.justreadflorida.com/docs/guide.pdf

Guidelines for Reviewing a Reading Program
<http://www.texasgateway.org/sites/default/files/resources/documents/U5M1Handout10.pdf>



Don't Be Put Off By Statistics

- Take a course that teaches evidence-based practice.
- Seek mentoring from local researcher or statistician.
- Join a forum that regularly reviews educational research journals.
- Take a basic statistics course.
- Read Statistics for Dummies: www.dummies.com

You can evaluate most of the article without statistical expertise.



Attend Professional Conferences

Look and listen for indications of scientific merit and profit motive.

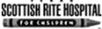
Obtain and review relevant references.



Suggestions for Improving Teacher Preparation

- Adopt a research-based teacher licensure exam in reading for general and special educators.
- Use research-based proficiency requirements for the practical application of the content of courses on reading instruction. (IDA Knowledge and Practice Standards for Teachers of Reading. <http://eida.org/knowledge-and-practices/>)
- Learn from university programs that have been recognized as having high standards for teacher training in reading. (University Programs in Reading Recognized by IDA <http://eida.org/university-programs-accredited-by-ida/>)
- Adopt accreditation processes for schools of education that require the teaching of the science of reading.
- Build education school faculty in reading science by professional development and hiring.
- Encourage research-practice collaboration.

Louise Spear-Swerling, Ph.D. SSSR 2012



Level of Evidence Quiz

World Federation of Neurology
Definition: Specific Developmental Dyslexia
(1968)

Teacher observations about Johnny

DTP Intervention Study: Journal of
Learning Disabilities (1998)



Level of Evidence Quiz

National Reading Panel Report (2000)

Dyslexia Lab Progress in *Take Flight*
(2005 – 2011)

Phono.- and Strategy-Based Reading Training:
Developmental Psychology (1994)



A CHECKLIST FOR EVALUATING EVIDENCE-BASED EDUCATIONAL INTERVENTIONS

Question	Response		
	Yes	No	Unclear
Part I. The Author			
A. Background information on author provided.			
B. The author's educational background is in the discipline in which the author is writing.			
C. The author is a recognized expert in the field covered by the article.			
D. The author is affiliated with a university or a highly regarded health/education organization.			
Part II. The Publication			
A. The journal uses a peer-review process for approval of its publications.			
B. Critical letters to the editor are published.			
Part III. The Research Design			
A. Introduction			
1. The aim of the study is clearly stated.			
2. Recent relevant research articles are listed in the references .			
B. Methods			
1. Subject assignment is random or there is a very closely matched comparison group.			
2. Description of participant characteristics includes ethnicity, SES, gender, age, grade, standardized ability and achievement scores, behavioral factors.			
3. Setting characteristics should cover demographic features of the school and community, teacher attributes, size of the intervention groups.			
4. Intervention procedures are presented in sufficient detail, including training and monitoring procedures.			
5. Observers are blind to the subjects' treatment during data collection which uses valid outcome measures.			
6. Data analysis explains why each statistic was selected and report tests for statistical significance.			
C. Results			
1. Outcomes should be presented using easy to understand terms and visuals.			
2. The percent and reasons for dropping out should be reported.			
3. Effects for different groups are given.			
D. Discussion			
1. Interpretation does not infer beyond results.			
2. Limitations and shortcomings are discussed.			
3. Implications for classroom or other use noted.			

"Yes" answers are needed to conclude that the intervention is supported by rigorous evidence.

Adapted from McKenzie, JF: A Checklist for Evaluating Health Information. *J School Health* 57:31, 1987 and Identifying and Implementing Educational Practices Supported by Rigorous Evidence: A User Friendly Guide. USDOE – IES, 2003.

Types of Scientific Evidence Glossary

Anecdotal Evidence: Evidence from the stories about individual cases based on the casual observations made by yourself or others.

Consensus Report: Written statement of the position generally agreed upon at a given time by most scientists specialized in a discipline. Consensus reports are often written when scientific evidence is lacking.

Meta-analysis: Combination of results from several studies about a research question that meets specified criteria for how the experiment was conducted and measured. Statistical methods are applied to analyze the combined data and the cumulative findings are summarized. Research syntheses (**systematic reviews**) incorporating meta-analysis are useful for generating policy and recommendations because they quantify the magnitude of practice effects usually reported as an effect size.

Non-experimental Study: Investigation that does not use a comparison or control group that produces descriptive data. Testing is done at baseline (pre) and after (post) treatment when the study is longitudinal. This type of study is commonly done when it is hard to adjust factors that deliver treatment or influence outcome. Conclusions can be appropriately made about correlations or relationships between practice and results but not about cause and effect.

Quasi-experimental Study: Study with a control group that does not randomly assign subjects to either the experimental or control-comparison group. This is a viable option when full randomization is not feasible. The possible presence of unobserved sources of bias is just one reason that multiple studies producing similar results are critical to obtaining valid conclusions. Judgments about evidence of effectiveness is strengthened when the experimental and control groups are closely matched, the comparison group is not comprised of individuals who declined the intervention and outcome measures were selected prior to treatment.

Randomized Control Trial: Study that assigns subjects to either the experimental group or control group at random. If there are enough subjects in each group, the groups are similar except for the difference in treatments. This type of study is the best way to infer cause and effect. It is also the only valid way to test hypotheses about what subcomponent of treatment is responsible for change, what situations work best or why an educational practice works.

Research Terms Glossary

Effect Size: Statistical concept that measures the size of the difference in two or more group means, e.g., average reading subskill of students in an experimental and comparison group. Effect sizes are commonly expressed in standard deviation units, e.g., an effect size of 1 means there is one standard deviation between the magnitude of one mean compared to another group mean. The bigger the effect

size, the bigger the difference between the group means, i.e. average reading in the groups in this case. Effect size reporting helps to determine if the result is large enough to be meaningful (i.e. clinical significance). In meta-analyses of reading research, effect sizes can be used to compare the impact of treatment achieved by different interventions. A commonly used effect size metric in education is called Cohen's d index. According to the d index, a value of 0.2 is considered small, 0.5 is moderate and 0.8 is a large difference between group means.

Hawthorne Effect: Change in a subject's behavior produced by experimental measurement, i.e. being watched. Intervention studies control for this by providing the experimental and comparison groups with comparable time with a teacher.

p-Value: The statistical measure indicating the likelihood that a phenomenon has occurred by chance. p Values of <.05 (less than 1 in 20) or <.01 (less than 1 in 100) are common standards for "statistical significance".

Placebo Effect: Improvement in health or behavior not attributable to the treatment. In education, placebo effects can be due to the student's having more confidence, less stress or greater effort.

Standard Deviation: Measure of variability (dispersion) that indicates the extent to which scores deviate from the mean. The standard deviation (SD) is the average of individual deviations from the mean of the scores in a specified group. When the scores of the specified group approximately follow a normal distribution, i.e. bell-shaped curve, about 67% of the individual scores are found within one standard deviation on either side of the average.

Standard Scores: A standard score reflects where a child's performance stands relative to other children the same age or grade. Raw scores that have been transformed into standard scores have a mean of 100 and standard deviation of 15. Standard scores specify how many units above or below the norm group mean (average) a specific child's score falls. Gain or decline in a standard score over time indicates that a child has improved or fallen in comparison with students of similar age or grade.

Transfer: Refers to transfer of learning. This occurs in education research when a dependent variable improves that is not directly taught. An example would be improvement in reading comprehension following vocabulary instruction.

Treatment Fidelity: The extent to which an intervention is provided according to its intended scope and sequence. In education intervention research, it is critical that strategies to monitor and enhance the accuracy and consistency of treatment are employed so that all study participants have equivalent instruction.

Suggested Reading

McCardle, P. and Chhabra, V. (2004). *The Voice of Evidence in Reading Research*. Baltimore, MD: Paul H. Brookes Publishing Co.

If you are serious about closing the research to practice gap, read this book. It was edited by literacy experts from the National Institute of Child Health and Human Development who wanted to make research information on reading more accessible to educators. The book addresses in a comprehensive yet understandable way questions that should be on the mind of all who teach reading to children: Why is scientifically based research so important to classroom practice and educational policy? How can educators recognize solid, research-based evidence? How can teachers make informed choices about applying research to teaching?

McCardle, P., Chhabra, V. and Kapinus (2008). *Reading Research in Action*. Baltimore, MD: Paul H. Brookes Publishing Co.

The authors of *The Voice of Evidence in Reading Research* provide K-8 educators practical direction on how to implement research-based practices in the classroom. Key findings from major reading research reports are summarized. What we know and what needs additional study concerning vocabulary, alphabeticity, fluency, comprehension, spelling, writing, motivation, assessment, professional development and response to intervention are outlined. Brief, applicable vignettes help make this book understandable and user-friendly.

Warby, D.B., Greene, M.T., Higgins, K. and Lovitt, T.C. (1999): Suggestions for Translating Research into Classroom Practices. *Intervention in School and Clinic*, 34 (4), 205-211, 223.

This article provides teachers with clear directions on how to locate, review and apply educational research to meet the specific needs of individual students and classrooms. An easy-to-use format is presented that guides the educator on how to synthesize a research article into a short reference for use in the classroom.

Gillam, S.L. and Gillam, R.B. (2008): Teaching Graduate Students to Make Evidence-Based Intervention Decisions. *Topics in Language Disorders*, 28(3), 212-228.

Respected professors in communication science describe how supervisors can use clinical practicum experiences to teach graduate students to make evidence-based assessment and treatment decisions. Sample student-supervisor dialogue demonstrates a seven-step process for helping students formulate a clinical question, search and evaluate research literature, identify client/family factors, implement and assess outcomes.

Resource for Evaluating a Research Report

Web site	Purpose of the site
Dept. of Education Guide for Educational Practitioners www.ed.gov/about/offices/list/ies/news.html#guide	The purpose of this site is to assist educators in finding and using strategies that have been validated in rigorous studies. This site allows users to download the Department of Education's Institute of Education Sciences (IES) user-friendly guide: <i>Identifying and Implementing Educational Practices Supported by Rigorous Evidence</i> . The 19-page publication offers tools to help distinguish practices supported by strong evidence from those that are not.

Resources for Evaluating Reading Interventions

Web site	Purpose of the site
A Consumer's Guide to Evaluating a Core Reading Program Grades K-3: A Critical Elements Analysis www.justreadflorida.com/docs/guide.pdf	Reading researchers from the University of Oregon provide a checklist for determining if a K-3 core reading program is supported by trustworthy evidence. New programs can be evaluated using the critical analysis guidelines for phonemic awareness, decoding and word recognition, irregular words, vocabulary, fluency and reading comprehension.
Guidelines for Reviewing a Reading Program http://www.texasgateway.org/sites/default/files/resources/documents/U5M1Handout10.pdf	The Florida Center for Reading Research (www.fcrr.org) developed this document with a scoring rubric to assist educators evaluating K-6 reading programs. The instructional sequence covers the five components found necessary by the National Reading Panel (www.nationalreadingpanel.org): phonological/phonemic awareness, phonics, fluency, vocabulary and comprehension.

Resources for Evidence-Based Educational Practices

Web site	Purpose of the site
What Works Clearinghouse (WWC) http://ies.ed.gov/ncee/wwc	<p>USDOE – Institute of Education Sciences reviews programs, products, practices and policies in education.</p> <p>PRACTICE GUIDES provide instructional recommendations to educators with a brief summary of the evidence with specific action steps, suggestions to overcome obstacles and references.</p> <p>INTERVENTION REPORTS summarize findings on an intervention, stating whether studies exist that satisfy WWC standards, and if so, comments about level of effectiveness are made.</p> <p>WWC also posts SINGLE STUDY REVIEWS and QUICK REVIEWS of recent research.</p>
Center on Instruction (COI) www.centeroninstruction.org	<p>Offers research-based materials, online courses, webinars and printable guides on assessment and instruction in reading, writing, STEM, ELL, RTI, eLearning (web-based, computer-based, virtual classrooms).</p> <p>COI is funded by USDOE, primarily to assist state departments of education, but has resources that are useful for school and district educators. Much of the content can be characterized as “synopses of syntheses.”</p>
Teaching LD Alerts www.teachingld.org/alerts	The Divisions of Learning Disabilities and Research of the Council for Exceptional Children sponsors these practitioner-friendly reviews of educational practices. Recommendations are made to “Go For It” (solid research evidence of effectiveness) or “Use Caution” (evidence is incomplete, mixed or negative). For example, a recent five page review on learning styles said “Use Caution.”
National Center on Intensive Intervention www.intensiveintervention.org	The USDOE-OSEP American Institutes for Research hosts this website. It contains a collection of research articles and briefs, training modules on assessment and instruction, and webinars. Sample lessons and activities to assist teachers providing intensive intervention are in the process of being developed and posted. The Academic Intervention Tools Chart rates the scientific rigor of studies of academic interventions, summarizes results and provides additional information about implementation and related reviews. Studies are evaluated by the Center’s Technical Review Committee.

American Speech-Language Hearing Association Evidence-Based Resources

Web site (sub-sections)	Purpose of the site
What to Ask When Evaluating Any Procedure, Product or Program http://www.asha.org/slp/evaluate.htm	Questions are provided to help clinicians decide if a procedure, product or educational program should be purchased, used or attended.
ASHA/N-CEP Evidence-Based Systematic Reviews http://www.asha.org/Research/EBP/EBSRs/	Reviews by the ASHA-National Center for Evidence-Based Practice in Communication Disorders describe the extent to which diagnostic and treatment approaches are supported by evidence.
Evidence-Based Practice http://www.asha.org/Research/EBP/	Key steps in evidence-based practice are explained. There are links to Evidence-Based Tutorials and Resources and Evidence Maps. Tutorials and Resources can be used to frame a clinical question, find and assess evidence, and make a clinical decision. Evidence Maps are brief synopses of guidelines, reviews and studies. Levels of evidence or evidence ratings are often given.