Evidence-Based Instruction

Participant's Handout

NOTE: Please complete the Pre-Test for the Evidence-Based Module before continuing.

What Works? Scientifically-based Instruction/Intervention

- Activate prior knowledge
  - Facilitates learning and recall
- Actively engage the student in learning
  - Hands-on, peer tutoring, cooperative learning, student-generated questions, reciprocal teaching
- Explicit instruction
  - Model, guided practice, practice
- Strategy instruction
  - Self-management, metacognitive, task specific
- Advance organizers
  - Provide the "big picture"
  - Use questioning (teacher or student generated)
- Engage higher level thinking skills
  - Go beyond rote recall
  - Compare/contrast, summarize, classify, apply, analyze, elaborate, solve problems
- Provide immediate, frequent, and relevant feedback on student's performance

Nine Best Instructional Strategies

- Identifying similarities and differences
- Summarizing and note taking
- Reinforcing effort and providing recognition
- Homework and practice
- Nonlinguistic representations
- Cooperative learning
- Setting goals and providing feedback
- Generating and testing hypotheses
- Activating prior knowledge

Marzano, R. J., Pickering, D. J., & Pollock, J. E. (2001). Classroom instruction that works. Alexandria, VA: Association for Supervision and Curriculum Development.

How is Intervention Different From Instruction?

Intervention provides intensive, scientifically-based instruction.

✔ 3 main ways to intensify instruction:

_____
_____
_____

Oral Language: Building the Bridge

What Research Says About Oral Language

Oral language's impact on academic learning is well-documented.

- Foundation for reading & writing
- Significant relationship between vocabulary and reading
- Significant relationship between background knowledge and reading

Hart and Risley (1995) conducted a longitudinal study of children and families from three groups:

- Professional families
- Working-class families
- Families on welfare

Hart, B. & Risley, T. R. (1995). Meaningful differences in the everyday experience of young American children. Baltimore, MD: Paul H. Brookes

✔ **Cumulative Words Per Hour**

- Children from families on welfare:_____
- Children from working-class families:_____
- Children from families with professional level jobs:_____

✔ Summarize the impact of socio-economic status (SES) on language.

_____
_____

✔ Summarize the impact of language on learning._____
_____

_____

Interventions for Oral Language Difficulties

- Provide a language rich environment (e.g., Hart & Risley, 2003)
- Provide frequent exposure and practice with words (e.g., Hart & Risley, 2003)
- Read aloud to the child (e.g., Adams, 1990)
- Use Text Talks (e.g., Beck & McKeown, 2001)
- Increase time spent reading (e.g., Cunningham & Stanovich, 1991)
- Read for different purposes (e.g., National Reading Panel, 2000)
- Provide explicit word instruction (e.g., National Reading Panel, 2000)
- Provide instruction in morphology (e.g., Carlisle, 2004)
- Develop word consciousness (e.g., Graves & Watts-Taffe, 2002)
- Use technology (e.g., Davidson, Elcock, & Noyes, 1996)
- Use graphic organizers (e.g., Greenleaf & Wells-Papanek, 2005)

Reading: Building the Bridge

Elements of Good Reading Instruction

✔ What are the major elements of reading instruction?
List and define each element.

_____
_____
_____
_____
_____
_____
_____
_____
_____

✔ What does research say is the most effective way to teach reading?

_____
_____

Interventions for Phonemic Awareness

- Early exposure to sounds, language, rhythms (e.g., Strickland, 1991)
- Reading aloud to the child (e.g., Adams, 1990)
- Opportunities to play with sounds (e.g., Adams, 1990)
- Daily practice with language (e.g., Bridge, Winograd, & Haley,1983)
- Explicit, systematic instruction using a synthetic phonics program (e.g., National Reading Panel, 2000)

Example of a Read Aloud Approach: Dialogic Reading

✔ List 3 benefits of using a read aloud approach:

1._____
2._____
3._____

Interventions for Decoding

- Explicit, systematic, synthetic phonics program (e.g., National Reading Panel, 2000)
- Decodable texts for daily practice (e.g., Meyer & Felton, 1999)
- Books on tape (e.g., Carbo, 1989)
- Teaching high frequency words (e.g., Ehri, 1998)
- Word recognition strategies (e.g., Moats, 1999)

Teach High-Frequency Words (Dolch or Fry)

✔ Why is this important?_____

Teach Word Recognition Strategies

- Glass-Analysis for Decoding
- Look-Spell-See-Write
- Games & activities
- Word Walls

Interventions for Vocabulary

- Text talks (e.g., Beck & McKeown, 2001)
- Semantic feature analysis (e.g., Pittelman, Heimlich, Berglund, & French, 1991)
- Explicit word instruction (e.g., Graves, Juel, & Graves, 2004)
- Increase time spent reading (e.g., Mastropieri, Leinart, & Scruggs, 1999)
- Read for different purposes (e.g., National Reading Panel, 2000)

✔ *Semantic Feature Analysis*

Place a + in the cell if the animal has the feature listed.
Place a – if the animal does not have the feature listed.

	Cold-blooded	Warm-blooded	Has hair	Lays eggs
Mammal				
Reptile				
Amphibian				

✔ *Graphic for Vocabulary Building*

_____
_____
_____
(Definition)

_____
(Synonym)

Prohibit

_____
(Antonym)

(Sentence or illustration)

- *Synonyms/Antonyms*
- *Graphics (visuals)*
- *Semantic maps*
- *KIM: Key Idea, Information, Memory Clue*
- *Explicit instruction in words and word parts*

✔ *What is a morpheme?*_____

*Combining morphemes to make words:*_____

_____

Interventions for Reading Fluency

- Repeated readings (e.g., Begeny & Martens, 2006)
- Taped books (e.g., Carbo, 1989)
- Practicing words in isolation (e.g., Levy, Abello, & Lysynchuk, 1997)
- Choral reading (e.g., Shany & Biemiller, 1995)
- Increase time spent reading (e.g., Mastropieri, Leinart, & Scruggs, 1999)

✔ Fluency is a bridge between _____ and _____.

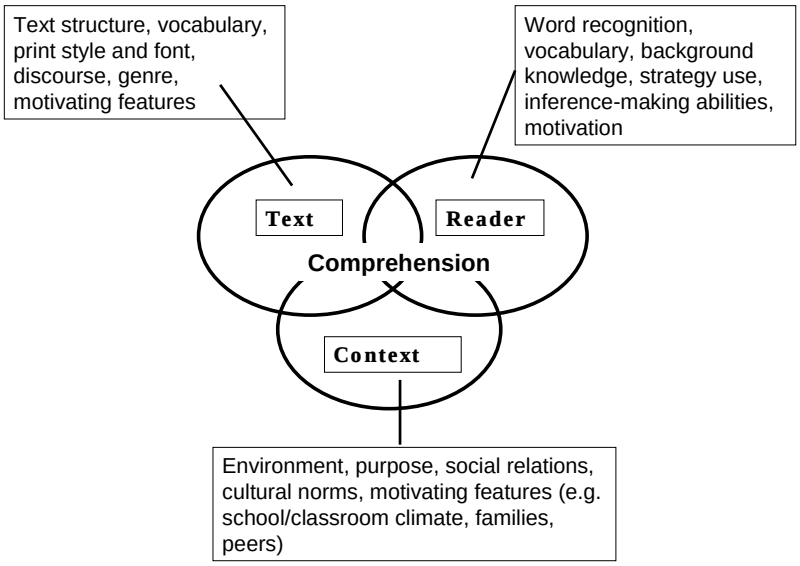
What is reading fluency?

- Accurate and quick reading of text
- Automatic decoding processes requiring little or no conscious attention
- Reads with proper expression (prosody)
- Repeated, monitored, & modeled oral reading is best mode of achieving *(Chard, Vaughn, & Tyler, 2002)*

Interventions for Reading Comprehension

- Activate prior knowledge (e.g., National Reading Panel, 2000)
- Graphic organizers (e.g., Marzano, Pickering, & Pollock, 2001)
- Self-monitoring strategies (e.g., National Reading Panel, 2000)
- Memory and imagery strategies (e.g., Mastropieri & Scruggs, 1998)

Comprehension is a Complex Process



Most Effective Comprehension Strategies

(National Reading Panel, 2000; Duke & Pearson, 2002)

- Using prior knowledge
- Using graphic and semantic organizers
- Monitoring comprehension
- Answering questions
- Generating questions
- Recognizing story structure
- Using mental imagery
- Summarizing

Graphic Organizers

K-W-L Strategy (Ogle, 1986)

Know	Want to Know	Learned

Self-Monitoring Strategies

Good readers monitor their reading, poor readers do not.

1. Does this make sense?
2. Reread
3. Predict
4. Skip, read on, go back
5. Use background knowledge
6. Stop and make a mental picture

✔ Summarizing Reading Interventions

1. Describe an intervention for phonemic awareness.

2. Describe an intervention for decoding.

3. Describe an intervention for reading fluency.

4. Describe an intervention for vocabulary.

5. Describe an intervention for comprehension.

Written Language: Building the Bridge

Interventions for Spelling

- Multisensory techniques (e.g., Carreker, 2005)
- Explicit, systematic, synthetic phonics instruction (e.g., National Reading Panel, 2000)
- Direct/explicit instruction (e.g., Edwards, 2003)
- Frequent practice (e.g., Berninger, Vaughn, Abbott, Brooks, Abbot, Rogan, Reed, & Graham, 1998)
- Teach common irregular words (e.g., Moats, 2005)
- Use the Write-Say method (e.g., Kearney & Drabman, 2001)
- Use Add-A-Word Spelling Program (e.g., Schermerhorn & McLaughlin, 1997)

Three Skills Required for Writing

- Handwriting or keyboarding (*letter* formation*, letter* selection)
- Spelling (*word* formation)
- Composition (*text* formation)
  (Berninger & Abbott, 2003)

Why Focus on Letter Formation?

- Early intervention in handwriting is effective and leads to improved composing. *(Graham, Harris, & Fink, 2000; Jones & Cristensen, 1999)*

- Automatic letter writing is best predictor of composition length and quality *(Graham, Berninger, Abbott, Abbott, & Whitaker, 1997; Jones, 2004; Connelly, Campbell, MacLean, & Barnes, 2006)*

Interventions for Writing Fluency

- Explicit instruction in mechanics of writing (e.g., Graham, et al., 1997)
- Word, phrase, & sentence-building activities (e.g., Hillocks, 1987)
- Frequent practice (e.g., Moats, 1999)
- Use of technology (e.g., MacArthur, Graham, & Schwarz, 1993)
- Develop automaticity of letter formation (e.g., Graham, et al., 1997)
- Develop spelling skills (e.g., Abbott & Berninger, 2003)

Research on Writing Fluency

- Rate of writing predicts later writing disability
- Transcription skills (handwriting and spelling) uniquely predict writing fluency throughout the elementary grades *(Graham, et al.,1997)*

Interventions for Written Expression

- Create a literate, motivating, risk-free environment (e.g., Gunn, Simmons, & Kame'enui, 1995)
- Provide direct instruction in the writing process (e.g., De La Paz, 1999)
- Teach text structures (e.g., Hillocks, 1995)
- Provide daily practice (e.g., Sulzby, 1992)
- Provide strategy instruction (e.g., Graham & Harris, 1989; 2003)

Recent Research Findings Related to Writing (Hillocks, 1995)

Students learn to write better:

- When they are taught procedural knowledge - how to do things
- By actively engaging them in relevant activities rather than listening or reading about how to write.
- By using activities designed and supervised by the teacher

Struggling Writers

- Minimal planning
- Problems with mechanics & language
- Minimal revising
- Poor self-regulation

Proficient Writers

- Planning (Set goals, select strategies)
- Production (Generate content, organize text)
- Revision (Evaluate, develop ideas)
- Self-Regulation (Am I using strategy? Is my writing improving?)

Importance of Text Structure

- Good writers use knowledge of text structure or genre to plan
- Connected to purpose for writing
- Helps to generate content
- Helps to organize paper
- Helps with self-evaluation

Strategy for Planning Persuasive Writing: (TREE)

- THINK: Who? Why?
- PLAN
  - ☐ T -- Topic sentence
  - ☐ R -- Reasons
  - ☐ E -- Examine reasons
  - ☐ E -- Ending
- Write and say more

More Interventions for Written Expression

- Teach specific strategies for planning and revising
- Teach students to self-regulate
  - ☐ Set goals
  - ☐ Cope with difficulties
  - ☐ Self-evaluate

  (Graham & Harris, 2005; Troia, & Graham, 2002; Wong, 1998, 2000, 2001).

✔ **Summarizing Writing Interventions**

1. Describe an intervention for spelling.

2. Describe an intervention for writing fluency.

3. Describe an intervention for written expression.

Mathematics: Building the Bridge

Interventions for Basic Math Skills

- Use manipulatives (e.g., Butler, Miller, Crehan, Babbitt, & Pierce, 2003)
- Develop number sense (e.g., Griffin, 1998)
- Teach strategies (e.g., Maccini & Hughes, 2000)
- Use concrete-representational-abstract technique (e.g., Morin & Miller, 1998)
- Use the cover-copy-compare technique (e.g., Hayden & McLaughlin, 2004)
- Peer assisted tutoring (e.g., Calhoon & Fuchs, 2003)
- Use computer-assisted instruction (e.g., Hasselbring, Goin, & Bransford, 1988)

✔ Number sense is to math as _____is to reading.

- Fluidity and flexibility with numbers
- Sense of what numbers mean
- Ability to perform mental mathematics
- Ability to look at the world and make comparisons. *(Berch, 1998)*
- A mental number line (critical "big idea" in math)
  (Phillips & Crowell, 1994; Tarver & Jung, 1995).

Interventions for Math Fluency

- Practice with math fact charts (e.g., Pellegrino & Goldman, 1987)
- Use of explicit timings (e.g., Rathovan, 1999)
- Develop number sense (e.g., Griffin, 1998)
- Use computer-assisted instruction using software that includes:
  - immediate feedback on incorrect responses
  - large amounts of practice

  (Pellegrino & Goldman, 1987; Siegler & Shrager, 1984);

Interventions for Math Reasoning

- Direct/explicit instruction (e.g., Kroesbergen & Van Luit, 2003)
- Use of data tables (e.g., Sellke, Behr, & Voelker, 1991)
- Strategy instruction (e.g., Lenz, Ellis, & Scanlon, 1996)
- Combination of direct instruction and strategy instruction yields best results (e.g., Kroesbergen & Van Luit, 2003)

Develop Math Problem-Solving

- Develop procedural knowledge to facilitate conceptual understanding
  - consistent use of strategies
  - reciprocal relationship (gain in one leads to gain in other)
- Give students frequent opportunities to verbalize their understanding and rationale for strategies they use to solve
- Provide extensive practice in solving

Most Effective Math Interventions *(Kroesbergen & Van Luit,2003)*

- Problem-Solving: self-instruction (*a self-regulation strategy and component of cognitive strategy instruction)*
- Basic Math Skills: direct instruction
- Both are superior to mediated/assisted instruction, i.e., peer tutoring or computer-assisted instruction

✔ Summarizing Math Interventions

1. Describe an intervention for math facts.

2. Describe an intervention for calculation.

3. Describe an intervention for problem-solving.

✔ Review of Evidence-Based Instruction

1. What is meant by active learning?

2. Why does activating prior knowledge help the learner?

3. How do advance organizers help the learner?

4. What are 3 ways to intensify instruction?

5. What is explicit instruction?

NOTE: Please complete the Post-Test for the Evidence-Based Instruction module. Compare your results from the Pre- and Post-Tests.

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