WRITING AND WRITING INSTRUCTION IMPROVE READING: WHAT WE HAVE LEARNED FROM RESEARCH

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Where are we at now?

- Good News - Some progress has been made in improving the literacy achievement of students in American schools during the last 20 years

- Bad News – The progress has been limited, and the majority of students still do not read or write well enough to meet grade-level demands.

For Example

- Most Recent National Assessment of Educational Progress in Reading (2009) found:
  - 67% of grade 4 students scored at the basic-level or below (33% below)
  - 68% of grade 8 students scored at the basic-level of below (25%)

This Has Serious Implications for

- School Success
- Economic Success
- Health
- Personal Well Being
- Participation in Social and Civic Activities

As a Result -

- There has been a systematic and concerted effort in this decade to identify effective practices for teaching literacy skills
  - National Reading Panel
  - Reading Next
  - Writing Next

One Overlooked Avenue

For enhancing Reading Skills has been

Writing

Why Do We Think Writing Might be Useful?

1. Reading and Writing are both functional activities that can be combined to accomplish specific goals, such as learning new ideas presented in a text.

For example, writing about information in a science text should facilitate comprehension and learning, as it provides the reader with a means for **recording**, **connecting**, **analyzing**, **personalizing**, and **manipulating** key ideas from the text.

2. Reading and Writing are connected, as they draw upon common knowledge and cognitive processes. Consequently, improving students' writing skills should result in improved reading skills.

3. Reading and Writing are both communication activities, and writers should gain insight about reading by creating their own texts, leading to better comprehension of texts produced by others.

Writing to Read

Let's start with some background information on meta-analysis

Effect Size

- Effect Size provides a standardized measure of the quantitative differences between two treatments, providing information on both the direction and magnitude of this difference.

How Is an Effect Size Calculated?

Calculated an effect size by subtracting the mean score of the treatment group at posttest from the mean score of the control group and divided the difference by the standard deviation of the posttest score for all students.

For studies that did not involve randomization (i.e., quasi-experimental studies), we applied the same procedure but corrected posttest scores using students' pretest scores.

Meta-analysis

- Averages the effect sizes, adjusting the weight of each effect size by the size of the sample of students participating in the study.

- It is assumed that effect sizes based on larger samples are more reliable (thus they receive a greater weight).

RULE OF THUMB

- Effect sizes OF .80 is LARGE
- Effect Size of .50 is MODERATE
- Effect size of .25 is SMALL

- Chlorine gas is very injurious to the human body, and the following experiments should, therefore, only be performed on the teacher.

Writing to Read

1. Does writing about material read enhance students' comprehension of text?

2. Does teaching writing strengthen students' reading skills?

3. Does increasing how much students' write improve how well they read?

Inclusion Criteria

1. Studies employing an experimental or quasi-experimental design were included

2. Studies were included if the treatment group wrote or received writing instruction

3. Studies were excluded if it was not possible to isolate the effect of the writing activity or writing instruction

   (e.g., if instruction included more than writing – for example, students did more than write about the text read)

Inclusion Criteria

5. Studies were excluded if students in the comparison condition wrote or received writing instruction

6. An included study had to assess reading performance

7. Studies were excluded if the writing treatment was identical to the reading outcome measure

   (e.g., if there were summary writing outcomes for a summary writing treatment)

Inclusion Criteria

8. Studies were included if they involved students in grades 1 to 12

9. Only studies that provided the data needed to calculate a weighted average effect size were included

Reading Outcome Measures

We calculated separate effect sizes for

- Reading comprehension
  - Example include: short answer questions, multiple choice tests, essay tests, summaries
  - Reading Fluency
  - Word reading skills (decoding, or nonsense word assessments)
- *If there was more than one measure for a reading construct, we averaged the effect sizes of each together

There Were Also Two Types of Tests

- Norm-Referenced Standardized Tests: Provide a more general measure of improvement

- Researcher-Developed: Are more closely tied to what is taught

Comparison Conditions

Almost 90% of the comparison conditions involved reading

- Reading
- Reading & rereading
- Reading & studying
- Reading & discussion
- Reading instruction

Results for Question 1

Does Writing About Material Read Enhance Comprehension of Text?

Does Writing About Material Read Enhance Comprehension of Text?

Research Question		Standardized Measures (ES)	Researcher Measures (ES)
Average Effect Size (ES) for all studies (grades 2-12)		**0.40 (N = 11)**	**0.50 (N = 50)**
I.	Generating or responding to questions (grades 6-12)		0.27 (N = 8)
II.	Note-taking (grades 3-12)		0.46 (N = 23)
III.	Writing Summaries (grades 3-12)		0.52 (N = 19)
IV.	Analysis or Interpretation (grades 2-12)		0.77 (N = 9)

Comparatively Speaking

- Reciprocal Teaching (Rosenshine & Meister, 1994)
  - ES = 0.32 for standardized tests,
  - ES = 0.88 for researcher-designed measures

- Vocabulary instruction (Elleman et al., 2009)
  - ES = 0.10 for standardized tests
  - ES = 0.50 for researcher-designed measures

*Not a direct comparison, but a bar

Additional Interesting Findings (Researcher Designed)

- Struggling Students ES = 0.63 (N = 12)

- Note Taking
  - Instruction in how to take notes ES = 0.55;
  - No instruction ES = 0.40

Other tidbits

- 93% of the 61 studies yielded positive results
- In 60% of the studies students wrote about Science and Social Studies text

Examples from the research studies

Question Generation

(Andre & Anderson, 1978-1979)

- Content Area: Psychology
- Grade Level(s): 11-12
- ES = 0.51

  - Students were given models of questions written by experts
  - Students taught to identify main ideas to serve as core of the questions
  - Students directed to form questions which asked for new instances of ideas or concepts
  - When generating a new instance was inappropriate, questions could be about the text, but in a paraphrased format.

Note-taking: Concept Maps

(Chang, Sung, & Chen, 2002)

- Content Area: Science
- Grade Level(s): 5
- ES = 0.52

- Scaffolded instruction:
  - Student were introduced to expert created models
  - Students filled in partially filled in expert models
  - Students were given word lists and concept links to help them create their own concept maps
  - Students independently created concept maps independently

Macrorules for Summarizing
(Weisberg & Balajthy, 1990)

- Content Area: Social Studies
- Grade Level(s): 10-12
- ES = 0.44

1. Delete material that is unimportant
2. Delete material that it repetitive
3. Substitute a superordinate term for subordinate ones (i.e., collapse lists)
4. Select a topic sentence
5. If there is no topic sentence, invent one

*Students were taught to underline and cross out information using different colors. Summary writing was **modeled** and **explained**

Analysis or Interpretation Essays
(Licata, 1993)

- Content Area: Science
- Grade Level(s): HS
- ES = 0.56 Analytic Essay
- ES = 0.33 Application Essay

- Analytical Essay (Compare/contrast): Students wrote about the similarities and differences between the pressure-volume and volume-temperature relations
- Application Essay: Students wrote about a concrete situation in which a balloon of gas is subjected to varying conditions

Results for Question 2

Does writing instruction strengthen reading?

Why Should It?

- Teaching students to be better writers should improve their reading skills:

  both processes depend on many of the same skills and knowledge… improving one should improve the other.

How?

Examples:

Spelling instruction may result in increased word identification and letter-sound knowledge

Sentence combining may result in greater facilitation of complex syntactical units in reading

Does writing instruction strengthen reading?

Research Question	Standardized Measures	Researcher Measures
Does writing instruction improve reading ***comprehension*** (e.g. sentence combining; text structure instruction)? (grades 4-12)	0.18 (N= 12)	0.27 (N = 5)
Does teaching spelling strengthen ***word reading*** skills? (grades 1-5)		0.68 (N = 5)
Does writing instruction improve reading ***fluency***? (grades 1-7)		0.79 (N=4)

An example -Teaching Text Structure

- Setting of a story and episode
  - Who
  - When
  - Where
  - What happens
  - How does it end

An example – sentence combining

- The noodles were long.
- The noodles were skinny.
- The noodles fell on the floor.
- The noodles cracked into pieces.
- The dinner was ruined.

An example – Spelling Instruction

- Effective activities include:
  - Word Sorting
  - Teaching Spelling Phonics and Morphology
  - Teaching Spelling Words
  - Word Building Activities

Results for Question 3

Does **increasing how much students write** improve how well they read?

Why would frequent writing improve reading?

- Having students write frequently should lead to better comprehension of text produced by others:

  writers should gain insights about reading text as a result of acting as an author

How? perhaps implicitly

- Process of creating text may prompt students to be more thoughtful and engaged when reading
- Observing rules of logic when composing
- Generating meaning by building relationships among words, sentences, paragraphs when writing

Does **increasing how much students write** improve how well they read?

Research Question	Standardized Measures	Researcher Measures
*All studies examined **comprehension** (e.g. writing about self-selected topics)	0.30 (N = 6)	

*Studies included only students in grades 1-6

What does it all mean?

Take Aways

Writing is an effective tool for enhancing reading and we need to take advantage of its power:

Writing about Material Read Facilitates Comprehension

Writing Instruction Promotes Students' Growth as Readers

Increasing How Much Students' Write Makes them Better Readers

Take Aways

- CAUTION: Writing practices should not take the place of effective reading practices

- Writing instruction should be emphasized as an integral part of school curricula:

  Students who do not develop strong writing skills may not be able to take advantage of writing as tool!

- Writing should be emphasized in the content areas

Take Aways

- At this point, it cannot be determined whether any one writing task is more effective than another...

Direct Comparisons of Writing Types

Additional meta-analyses for direct comparisons of writing types:		
Comparison	N	ES (Confidence Interval)
Questions vs. Notes	8	-0.203 (-0.69, 0.29)
Questions vs. Extended Writing	6	0.21 (-0.07, 0.48)
Summary vs. Notes	4	0.07 (-0.20, 0.34)
Summary vs. Questions*	4	0.23 (-0.05, 0.52)

*Note. All of the studies used in this comparison favored the summary writing condition, but the ES was not significant.

Questions?

CENTER ON INSTRUCTION

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