

The Impact of Vocabulary Instruction on Passage-Level Comprehension of School-Age Children: A Meta-Analysis

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In this research, a meta-analysis of 37 studies on vocabulary interventions from pre-Kindergarten to Grade 12 was conducted to provide a fuller understanding of the impact of vocabulary on comprehension. Vocabulary instruction was found to be effective for increasing student abilities in comprehending text with custom measures less effective for standardised measures. Students with reading difficulties benefited more than three times as much as students without reading problems on comprehension measures.

Authors: Amy M. Elleman, Endia J. Lindo, Paul Morphy, & Donald L. Compton

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- The ability to understand and gain knowledge from text is a fundamental skill required in every school subject and in everyday life.
- Large numbers of school-age children experience significant problems in learning to read.
- The knowledge hypothesis states that words are part of larger knowledge structures. Further, these knowledge structures (not the words per se) affect a person's comprehension.
- The aptitude hypothesis postulates there is no causal relationship between vocabulary and comprehension.
- According to the reciprocal hypothesis, most of children's growth in vocabulary occurs incidentally, not through instruction or conversation. This learning occurs incrementally over time through multiple exposure to words in varied contexts.
- While the two studied hypotheses provide a viable explanation for the relationship between vocabulary and comprehension, they are not mutually exclusive and each probably provides a partial explanation.

Examples of different instructions used:

- Association: this instruction pairs association of the new word with its definition or synonym.
- Comprehension: this instruction requires that the student demonstrates comprehension of the meaning of the word by doing something with the definitional information.
- Generation: this instruction requires the students to generate a novel oral or written response using the

word.



The study

The present meta-analysis asks the following questions concerning comprehension outcomes for students from pre-Kindergarten through to Grade 12:

1. Does vocabulary instruction affect passage-level comprehension?
2. What methodological characteristics are associated with effect size and need to be controlled to avoid confounding of the findings?
3. Do the same factors that affect comprehension influence vocabulary improvements in the same way?
4. Are the effects in vocabulary associated with the effects in comprehension?

Data

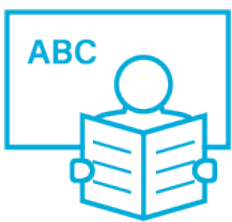
This meta-analysis included 37 articles that met the eligibility criteria. All eligible reports were coded for effect size and study characteristics. The d statistic was used as an effect size, which was calculated by taking the difference between the intervention group and the control group means and dividing by the pooled standard deviations of the means.



Findings

- The literature search yielded 37 eligible studies from which 44 effect sizes were derived for comprehension outcomes.
- A vocabulary measure was administered in 28 of the studies, from which 37 independent effect sizes were derived.
- Effects from standardised measures were minimal and effects associated with having reading difficulties were larger than those with not reading problems.
- The comprehension effect sizes for standardised measures ranged from -0.26 to 0.43 with an overall random weighted mean effect size of 0.1 (not significantly different from zero).
- The effect sizes for custom measures ranged from -0.06 to 1.46 with an overall random-weighted mean effect size of 0.50 (significantly different from zero). This means students who received vocabulary interventions outperformed students who did not receive such instruction on comprehension outcomes aligned to the treatment.
- The effect sizes for standardised vocabulary measures ranged from -0.24 to 0.46 with an overall random-weighted mean effect size of 0.29 ($p < 0.01$). This indicates students who received vocabulary instruction increased their word knowledge on standardised tests.
- The mean effect sizes for custom measures of vocabulary ranged from -0.11 to 2.28 with an overall random-weighted effect size of 0.79 ($p < 0.01$). This demonstrates students who received vocabulary instruction had a wider vocabulary compared to students in control conditions.
- Students identified as having reading difficulties benefited more from vocabulary instruction on comprehension outcomes than students who had no indicated risk of a reading problem or disability.

- The results suggest the benefit of vocabulary instruction is more apparent on measures of vocabulary for younger students, whereas the benefit is more apparent on measures of comprehension for older students.
- If we assume the instrumentalist hypothesis is true, we would expect comprehension effects to be strongly and positively correlated with vocabulary effects. However, the results would indicate this is not true.



Summary

- Although a positive overall effect of vocabulary training on comprehension assessed with custom measures was found, the effect for standardised measures was minimal.
- The overall positive effects found for custom measures suggest that vocabulary training increases comprehension for all students.
- Students identified as having reading problems benefitted more than students with no indicated reading problem by a factor of three.
- Students with reading difficulties made equivalent improvements in vocabulary knowledge as those students without reading difficulties.
- If students learn target words contained in the text, it can free up cognitive resources that can be allocated for the higher level processes of integrating text.
- Improvements in comprehension may be due to increased knowledge of the topics and the words learned.

- Regardless of the type of vocabulary instruction used, the same effects were produced on comprehension.
- Studies that utilised higher levels of discussion were associated with larger effects for vocabulary outcomes.
- Practitioners should use high levels of discussion to promote vocabulary development.