Reading comprehension strategies[i]

High Impact for very low cost, based on extensive evidence.

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Definition

Reading comprehension strategies involve the teaching of explicit approaches and techniques a learner can use to improve their reading fluency and comprehension of written text. Examples of such techniques include: inferring the meaning from context; summarising or identifying key points; using graphic or semantic organisers; developing questioning strategies; and monitoring their own comprehension and identifying difficulties themselves (see also Metacognition and self-regulation).

Search terms: reading comprehension strategies; text comprehension strategies.

Evidence Rating

There are eight meta-analyses which look at improving reading outcomes by developing reading comprehension strategies, five of which have been undertaken in the last ten years. These mainly use studies which focus on helping pupils who are low attaining readers aged between eight and eighteen to catch up with their peers, rather than on accelerating normal progress, so tend to have relatively small samples. The evidence in this area dates back over last 30 years, with the majority of studies conducted in the USA. The pooled effect sizes range between 0.10 and 0.74 (a range of nearly two-thirds of a standard deviation). Overall, the evidence is rated as extensive.

Cost Information

The cost of the resources and professional training required to deliver reading comprehension strategies is estimated as very low. Evidence suggests that reading comprehension approaches need to be tailored to a pupil's current reading capabilities, so it is important that teachers receive professional development in effective diagnosis as well as training in the use of particular techniques

and materials. The cost for an intervention with this type of training is estimated at £1,200 per teacher or £48 per pupil.

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Summary of effects

Meta-analyses	Effect size	FSM effect size
Berkeley, S., Scruggs, T. E., & Mastropieri, M. A. (2010)	0.65	-
Davis, D. S. (2010)	0.36	0.31
Edmonds, M. S., Vaughn, S., Wexler, J., Reutebuch, C., Cable, A., Tackett, K. K., & Schnakenberg, J. W (2009)	0.47	-
Elleman, A. M., Lindo, E. J., Morphy, P., & Compton, D. L. (2009)	0.1	-
Fauzan, N. (2003)	0.5	-
Fukkink, R. G., & De Glopper, K. (1998)	0.43	-
Galloway, A. M. (2003)	0.74	-
Scammacca, N. K., Roberts, G., Vaughn, S., & Stuebing, K. K. (2015)	0.49	-
Single Studies		
Berkeley, S., Mastropieri, M. A., & Scruggs, T. E. (2011)	0.71	-
Clarke, P. J., Snowling, M. J., Truelove, E., & Hulme, C. (2010)	0.24	-
Crawford, C. & Skipp, A. (2014)	0.09	-
Spörer, N., Brunstein, J. C., & Kieschke, U. L. F. (2009)	0.38	-
Weighted mean	**0.45**	

Meta-analyses abstracts

2

Berkeley, S., Scruggs, T. E., & Mastropieri, M. A. (2010)

Meta-analysis procedures were employed to synthesize findings of research for improving reading comprehension of students with learning disabilities published in the decade following previous meta-analytic investigations. Forty studies, published between 1995 and 2006, were identified and coded. Nearly 2,000 students served as participants. Interventions were classified as fundamental reading skills instruction, text enhancements, and questioning/strategy instruction—including those that incorporated peer-mediated instruction and self-regulation. Mean weighted effect sizes were obtained for criterion-referenced measures: .69 for treatment effects, .69 for maintenance effects, and .75 for

generalization effects. For norm-referenced tests, the mean effect size was .52 for treatment effects. These outcomes were somewhat lower than but generally consistent with those of previous meta-analyses in their conclusion that reading comprehension interventions have generally been very effective. Higher outcomes were noted for interventions that were implemented by researchers. Implications for practice and further research are discussed.

5

Davis, D. S. (2010)

This meta-analytic review includes intervention studies published between 1980 and 2009 in which students in grades 4-8 are taught to use two or more comprehension strategies. The collected studies were coded using a systematic data extraction scheme developed to address the central questions of the review. Information related to the characteristics of the student sample and instructional and methodological characteristics of each study were compiled in a database. Numerical effect sizes for each study for each major outcome measure were computed. The mean effect of comprehension strategy instruction on each of the targeted outcome constructs was calculated to provide an overall summary of instructional effectiveness.

6

Edmonds, M. S., Vaughn, S., Wexler, J., Reutebuch, C., Cable, A., Tackett, K. K., & Schnakenberg, J. W (2009)

This article reports a synthesis of intervention studies conducted between 1994 and 2004 with older students (Grades 6–12) with reading difficulties. Interventions addressing decoding, fluency, vocabulary, and comprehension were included if they measured the effects on reading comprehension. Twenty-nine studies were located and synthesized. Thirteen studies met criteria for a meta-analysis, yielding an effect size (ES) of 0.89 for the weighted average of the difference in comprehension outcomes between treatment and comparison students. Word-level interventions were associated with ES = 0.34 in comprehension outcomes between treatment and comparison.

7

Elleman, A. M., Lindo, E. J., Morphy, P., & Compton, D. L. (2009)

A meta-analysis of vocabulary interventions in grades pre-K to 12 was conducted with 37 studies to better understand the impact of vocabulary on comprehension. Vocabulary instruction was found to be effective at increasing students' ability to comprehend text with custom measures (d = 0.50), but was less effective for standardized measures (d = 0.10). When considering only custom measures, and controlling for method variables, students with reading difficulties (d = 1.23) benefited more than three times as much as students without reading problems (d = 0.39) on comprehension measures. Gains on vocabulary measures, however, were comparable across reading ability. In addition, the correlation of vocabulary and comprehension effects from studies reporting both outcomes was modest (r = .43).

8

Fauzan, N. (2003)

The purpose of the study was to investigate the effectiveness of metacognitive strategies on reading comprehension by means of (a) a meta-analysis and (b) an experiment designed following the metaanalysis implemented in Sarawak, Malaysia. Before the meta-analysis, the prevalent theories and issues in the reading literature such as metacognition, models of reading, measurements, motivation and previous meta-analysis were discussed to provide a better understanding of the research area in this study. A meta-analytic procedure conducted to review the primary research studies of metacognitive strategies used effect size as the measure of effectiveness. Searching for the articles and theses in the 1980s until 2001 yielded a record of 473 abstracts and articles from which there were twenty seven studies with a total number of eighty two effect sizes that could be quantitatively synthesized to compare the group performance of the experimental and control groups. The weighted effect size was 0.50 (95% Cl = 0.45 to 0.56) when dependent effect sizes were synthesized, and 0.55 (95% CI=0.48 to 0.63) when the extreme 'outliers' or deviated effect sizes were excluded and independent effect sizes were created. Overall, the effect size was moderate indicating a positive outcome of the metacognitive strategies. The effect sizes were not homogeneous and further analyses of the qualitative and quantitative features of the studies were made to develop possible reliable estimates.

9

Fukkink, R. G., & De Glopper, K. (1998)

A meta-analysis of 21 instructional treatments aimed at enhancing the skill of deliberately deriving word meaning from context during reading shows a medium effect size of 0.43 standard deviation units (p < .000). An exploratory multilevel regression analysis shows that clue instruction appears to be more effective than other instruction types or just practice (β = 0.40). Effect size correlates negatively with class size (β = .03). Implications for instruction and future research are discussed. Future studies should investigate the effect of instruction on both the skill of deriving word meaning from context and incidental word learning to evaluate its contribution to vocabulary growth.

10

Galloway, A. M. (2003)

Over the past 30 years, research has increasingly sought to examine the efficacy of metacognitive strategy instruction to improve reading comprehension. While some interventions have focused on single-strategy interventions, others have employed multiple-component strategy packages to improve the self-regulatory skills of readers. Reciprocal Teaching is the most widely researched multi-component metacognitive strategy-training program. Although an early review of the Reciprocal Teaching procedure was conducted in 1994 (Rosenshine & Meister), it was based primarily on unpublished work. Since that time, the number of published studies examining the Reciprocal Teaching procedure has more than doubled. In addition, recent advances in the evaluation of the evidence base for interventions in school psychology have helped to delineate the variables important for reviewing interventions in education and psychology. ^ Using a traditional meta-analysis in conjunction with recently developed standards for evaluating evidence-based interventions in School Psychology, this study found a moderate effect size for interventions employing the Reciprocal Teaching procedure to improve reading comprehension. Unlike the earlier review of the Reciprocal Teaching procedure, this study did not find significant differences between the effect sizes produced for norm-referenced and experimenter/teacher-generated tests. Analysis of measures of strategy use and reading comprehension follow-up measures suggest that the effects of Reciprocal Teaching are not only a function of strategy use but are maintained over time. ^ While the certainty with which conclusions can be drawn from this study is limited due to a relatively small sample size, the Reciprocal Teaching procedure appears to hold promise for helping students to develop the types of self-regulatory strategies used by skilled readers to promote reading comprehension. While there remain a number of questions regarding the conditions under which Reciprocal Teaching is maximally effective, the available evidence suggests that the procedure can help readers to develop skills that promote independent reading comprehension. Future research that investigates permutations of the procedure,

its utility with populations with varying demographic characteristics, and the relationship between this procedure and other forms of reading instruction is likely to promote greater understanding of the procedure and its effects.

12

Scammacca, N. K., Roberts, G., Vaughn, S., & Stuebing, K. K. (2015)

This meta-analysis synthesizes the literature on interventions for struggling readers in Grades 4 through 12 published between 1980 and 2011. It updates Scammacca et al.'s analysis of studies published between 1980 and 2004. The combined corpus of 82 study-wise effect sizes was meta-analyzed to determine (a) the overall effectiveness of reading interventions studied over the past 30 years, (b) how the magnitude of the effect varies based on student, intervention, and research design characteristics, and (c) what differences in effectiveness exist between more recent interventions and older ones. The analysis yielded a mean effect of 0.49, considerably smaller than the 0.95 mean effect reported in 2007. The mean effect for standardized measures was 0.21, also much smaller than the 0.42 mean effect reported in 2007. The mean effects for reading comprehension measures were similarly diminished. Results indicated that the mean effects for the 1980–2004 and 2005–2011 groups of studies were different to a statistically significant degree. The decline in effect sizes over time is attributed at least in part to increased use of standardized measures, more rigorous and complex research designs, differences in participant characteristics, and improvements in the school's "business-as-usual" instruction that often serves as the comparison condition in intervention studies.