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ies INSTITUTE OF EDUCATION SCIENCES

July 2013

WWC Review of the Report "The Impact of Collaborative Strategic Reading on the Reading Comprehension of Grade 5 Students in Linguistically Diverse Schools"[1]

The findings from this review do not reflect the full body of research evidence on *Collaborative Strategic Reading (CSR)*.

What is this study about?

The study examined the impact of *Collaborative Strategic Reading (CSR)*, a set of instructional strategies used to build reading proficiency, on the reading comprehension of fifth-grade students. The analysis included 1,355 students from 74 social studies classrooms within 26 linguistically diverse schools. The schools were located in five districts in Oklahoma and Texas.

Within each school, researchers randomly assigned social studies classrooms to either the intervention condition or the comparison condition at the start of either the 2006–07 or the 2007–08 school year. Teachers in the intervention condition used *CSR* instructional strategies when delivering social studies instruction for a period of one school year. Teachers in the comparison condition provided business-as-usual instruction of social studies. Various curricula were used across both conditions.

Study authors assessed the effectiveness of *CSR* on reading comprehension by comparing student performance on the Group Reading Assessment and Diagnostic Evaluation (GRADE) administered in May at the end of the school year.[2]

Features of *Collaborative Strategic Reading (CSR)*

CSR is a set of instructional strategies designed to improve the reading comprehension of students with diverse abilities. The *CSR* approach uses both small group instruction (groups of 10–12 students) and whole class instruction. Teachers introduce *CSR* to students by teaching them four comprehension strategies. Then, students apply those strategies while working in cooperative learning groups. The four strategies include:

- *Preview:* scanning text, brainstorming, and predicting what will be presented,
- *Click and Clunk:* monitoring reading for difficult/unfamiliar words,
- *Get the Gist:* identifying the main idea, and
- *Wrap up:* summarizing what was read.

What did the study find?

Study authors reported that *CSR* did not have a significant impact on student reading comprehension, and the WWC confirmed this result. In addition, the impact of the intervention was not large enough to be considered substantively important according to WWC criteria.

WWC Rating

The research described in this report meets WWC evidence standards without reservations

Strengths: The study is a well-implemented randomized controlled trial with low attrition[3] at the classroom and student levels.

Appendix A: Study details

Hitchcock, J., Dimino, J., Kurki, A., Wilkins, C., & Gersten, R. (2011). *The impact of Collaborative Strategic Reading on the reading comprehension of grade 5 students in linguistically diverse schools.* (NCEE 2011–4001). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.

Setting

The study was conducted in five school districts in Oklahoma and Texas. The districts were large (10,000 or more students) urban or suburban districts with at least 25% of students classified as English language learners (ELLs). The participating schools in this study were a convenience sample of volunteer schools from these districts, rather than a randomly selected sample.

Study sample

In each of the five districts, social studies classrooms were randomly assigned to either the intervention or comparison condition within schools. The random assignment process was designed to balance the number of classrooms assigned to the conditions within each school and each district. Schools had between two and five classrooms that were eligible to participate in the study. Therefore, each school had at least one intervention classroom and at least one comparison classroom.

The initial sample included 86 classrooms from 30 schools. The analysis sample included 1,355 students from 74 classrooms in 26 schools. This included 227 students that had either pretest or posttest data imputed by the authors. Imputation was conducted only for students who were enrolled at baseline, had parental consent, were testable, and had at least one valid Group Reading Assessment and Diagnostic Evaluation test score at either pretest or posttest.[4]

Approximately 48% of the analysis sample were male, 63% were Hispanic, 24% were African American, and 73% qualified for free or reduced-price lunch. In addition, 44% of the students were currently or previously classified as ELLs.

Intervention group

Teachers in the intervention group used the *Collaborative Strategic Reading* approach while providing social studies instruction using various curricula for a period of one year.

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In the intervention classrooms, observations were conducted to assess the fidelity of implementation of *CSR* strategies. Observations focused on the degree to which teachers were (a) conducting a whole class preview to introduce the lesson, (b) pre-teaching vocabulary, (c) circulating among groups and monitoring students' use of strategies during group work, (d) circulating among groups and reinforcing content learning during group work, and (e) providing ongoing instruction in the comprehension strategies (e.g., modeling or coaching on how to use strategy). Observational data indicated that 21.6% of teachers used all five of these strategies, while 56.7% used three or fewer.

Comparison group

Teachers in the comparison condition provided business-as-usual social studies instruction without the *CSR* strategies being explicitly used.

Outcomes and measurement

The study examined scores on the GRADE assessment in the spring of the school year during which the intervention was implemented. For a more detailed description of this outcome measure, see Appendix B.

Support for implementation

Each district held a 2-day training session for all teachers at the start of the school year, prior to pretesting. Both intervention and comparison teachers attended the introductory overview session. Intervention teachers then participated in four *CSR* training segments: theoretical foundations of *CSR*, *CSR* comprehension strategies, implementation practices and logistics, and coaching. The training was conducted by the study's co-principal investigator and the co-developer of *CSR* and was also attended by coaches assigned to the intervention teachers. Ninety-two percent of teachers in the intervention group attended both days of training. Those who could not attend due to medical reasons received a DVD recording of the training and a phone call from their assigned coach. In addition, intervention teachers received four follow-up coaching sessions during the school year.

Reason for review

This study was identified for review by the WWC because it is an Institute of Education Sciences (IES)-funded study conducted by 2006–11 Regional Education Laboratory Southwest at Edvance Research.

Appendix B: Outcome measure for the reading comprehension domain

Reading comprehension	
Group Reading Assessment and Diagnostic Evaluation	GRADE is a standardized, nationally normed, group-administered assessment of student reading, including vocabulary, reading comprehension, and metacognitive skills for understanding informational text. The total scaled score includes subscales for vocabulary, sentence comprehension, and passage comprehension. Form A was administered as the pretest in the fall of the intervention year and Form B as the posttest in the spring of the intervention year; the two forms are equivalent. The test is untimed, and a second session was provided for struggling readers when determined to be appropriate by the lead data collector and classroom teachers (as recommended by the test developer).

Appendix C: Study findings for the reading comprehension domain

Domain and outcome measure	Study sample	Sample size	Mean (standard deviation)		WWC calculations			*p*-value
			Intervention group	Comparison group	Mean difference	Effect size	Improvement index	
Reading comprehension								
GRADE	*CSR* vs. comparison	74 classrooms/ 1,355 students	98.67 (12.06)	98.01 (11.71)	0.66	0.05	+2	0.11
Domain average for reading comprehension						**0.05**	**+2**	**Not statistically significant**

Table Notes: Positive results for mean difference, effect size, and improvement index favor the intervention group; negative results favor the comparison group. The effect size is a standardized measure of the effect of an intervention on student outcomes, representing the change (measured in standard deviations) in an average student's outcome that can be expected if the student is given the intervention. The improvement index is an alternate presentation of the effect size, reflecting the change in an average student's percentile rank that can be expected if the student is given the intervention. GRADE = Group Reading Assessment and Diagnostic Evaluation.

Study Notes: The sample sizes, means, standard deviations, mean difference, effect size, and the *p*-value presented in this report were taken from impact estimates reported in the study. The authors estimated impacts using two-level hierarchical linear modeling (HLM) that nested students within classrooms and estimated an intervention effect for each school. The overall adjusted mean difference was then calculated as an average of the school-level impacts weighted by the number of students at each school. Due to missing student-level outcomes at pretest or posttest, a multiple imputation procedure was used and implemented in imputation and variance estimation software (IVEware) (Raghunathan et al., 2001). All estimates, including *p*-values, were adjusted for the imputation process and satisfy WWC criteria. The statistical significance of the study's domain average was determined by the WWC; the study is characterized as having no discernible effects on reading comprehension because the effect on one outcome examined was not statistically significant or substantively important.

Endnotes

[1] Single study reviews examine evidence published in a study (supplemented, if necessary, by information obtained directly from the author[s]) to assess whether the study design meets WWC evidence standards. The review reports the WWC's assessment of whether the study meets WWC evidence standards and summarizes the study findings following WWC conventions for reporting evidence on effectiveness. This study was reviewed using the Adolescent Literacy review protocol, version 2.0.

[2] The authors also assess the effectiveness of *CSR* for two subgroups: all former and current English language learner (ELL) students and non-ELL students. Those findings are not reported in this review for two reasons: (a) insufficient information is reported in the study to apply WWC evidence standards to the subgroup analyses, and (b) the authors clearly note that the analysis of these subgroups was for the purpose of an exploratory exercise.

[3] Two research decisions influenced the assessment of attrition results reported in this single study review: (a) random assignment was performed before families provided consent, and (b) multiple imputation was used to produce a complete dataset without missing data for the final analysis sample. To proceed, the WWC assessed sub-cluster attrition using the following student samples: (a) at baseline, the student sample was taken as those in classrooms at the time of random assignment (intervention = 827, comparison = 825), regardless of parental consent, and (b) at analysis, the WWC used students who completed both pre- and posttests (intervention = 584, comparison = 544), that is, without imputation, as the analytic sample. Based on this most conservative assessment, attrition is low according to WWC standards.

[4] All WWC criteria for implementing an acceptable multiple imputation method are satisfied in this study. First, attrition in the absence of imputation is low. Second, the authors name the method and software that was used to implement the method: Raghunathan et al. (2001) and IVEware (citations below). Third, the authors perform the imputation separately by intervention condition. Fourth, more than one imputed dataset was created for the analysis—in this case, ten. Finally, all analyses, including inference, were adjusted according to the multiply imputed datasets.

Raghunathan, T. E., Lepkowski, J. M., Van Hoewyk, J., & Solenberger, P. (2001). A multivariate technique for multiple imputing missing values using a sequence of regression models. *Survey Methodology, 27*(1), 85–95.

Raghunathan, T. E., Solenberger, P. W., & Van Howeyk, J. (2002). *IVEware: Imputation and variance estimation software [computer software]*. Ann Arbor, MI: University of Michigan.

Recommended Citation

U.S. Department of Education, Institute of Education Sciences, What Works Clearinghouse. (2013, July). *WWC review of the report: The impact of Collaborative Strategic Reading on the reading comprehension of grade 5 students in linguistically diverse schools.* Retrieved from http://whatworks.ed.gov

Glossary of Terms

Attrition Attrition occurs when an outcome variable is not available for all participants initially assigned to the intervention and comparison groups. The WWC considers the total attrition rate and the difference in attrition rates across groups within a study.

Clustering adjustment If intervention assignment is made at a cluster level and the analysis is conducted at the student level, the WWC will adjust the statistical significance to account for this mismatch, if necessary.

Confounding factor A confounding factor is a component of a study that is completely aligned with one of the study conditions, making it impossible to separate how much of the observed effect was due to the intervention and how much was due to the factor.

Design The design of a study is the method by which intervention and comparison groups were assigned.

Domain A domain is a group of closely related outcomes.

Effect size The effect size is a measure of the magnitude of an effect. The WWC uses a standardized measure to facilitate comparisons across studies and outcomes.

Eligibility A study is eligible for review if it falls within the scope of the review protocol and uses either an experimental or matched comparison group design.

Equivalence A demonstration that the analysis sample groups are similar on observed characteristics defined in the review area protocol.

Improvement index Along a percentile distribution of students, the improvement index represents the gain or loss of the average student due to the intervention. As the average student starts at the 50th percentile, the measure ranges from –50 to +50.

Multiple comparison adjustment When a study includes multiple outcomes or comparison groups, the WWC will adjust the statistical significance to account for the multiple comparisons, if necessary.

Quasi-experimental design (QED) A quasi-experimental design (QED) is a research design in which subjects are assigned to intervention and comparison groups through a process that is not random.

Randomized controlled trial (RCT) A randomized controlled trial (RCT) is an experiment in which investigators randomly assign eligible participants into intervention and comparison groups.

Single-case design (SCD) A research approach in which an outcome variable is measured repeatedly within and across different conditions that are defined by the presence or absence of an intervention.

Standard deviation The standard deviation of a measure shows how much variation exists across observations in the sample. A low standard deviation indicates that the observations in the sample tend to be very close to the mean; a high standard deviation indicates that the observations in the sample are spread out over a large range of values.

Statistical significance Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between the groups. The WWC labels a finding statistically significant if the likelihood that the difference is due to chance is less than 5% ($p < 0.05$).

Substantively important A substantively important finding is one that has an effect size of 0.25 or greater, regardless of statistical significance.

Please see the WWC Procedures and Standards Handbook (version 2.1) for additional details.