What Works Clearinghouse™

∴ies INSTITUTE OF EDUCATION SCIENCES

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WWC Review of the Report "Help with English Language Proficiency 'HELP' Program Evaluation of Sheltered Instruction Multimedia Lessons"[1]

The findings from this review do not reflect the full body of research evidence on *Help with English Language Proficiency (HELP)*©.

What is this study about?

The study examined the effectiveness of *Help with English Language Proficiency (HELP)*©, a computer-based supplementary curriculum designed to improve the math achievement of English language learners (ELLs).

Students in nine classrooms across three Colorado school districts participated in the study. One hundred and fifty-four ELL students in grades 6 and higher were randomly assigned within their classrooms to either the *HELP*© condition or a comparison condition. The final study sample consisted of 73 students in each condition.

Students in the *HELP*© condition received their regular math instruction and supplemental instruction by working with the *HELP*© program in a school computer lab during the school day. In one school, students received the curriculum after school. Students in the comparison group participated in their school's regular business-as-usual math curriculum.

The study assessed the effectiveness of *HELP*© by comparing the math achievement of students in the *HELP*© and comparison conditions at the end of the 2.5-month implementation period.[2]

What did the study find?

The study found, and the WWC confirmed, that students in the *HELP*© condition had scores that were statistically significantly higher than students in the comparison condition on the math achievement posttest.

Features of *HELP*

Help with English Language Proficiency (HELP)© is an Internet-based supplementary curriculum designed by Digital Directions International to remove language barriers from the learning of math skills and math content. The program is designed to help English language learners, and Spanish-speaking students in particular, increase performance in math by simultaneously improving content knowledge while developing English language proficiency.

HELP© was developed with student participation and adapted from the Sheltered Instruction Observation Protocol (SIOP) model of classroom-based instruction for limited English speakers, capturing specific techniques of sheltered instruction through interactive, computer-based multimedia. These techniques include (1) breaking math concepts down into smaller learning segments and making visual connections between words, symbols, and meanings, (2) building background knowledge and skills, (3) hyperlinking math content words to an online dictionary, (4) providing bilingual support for custom curriculum and assessment, and (5) teaching problem solving and test-taking skills, with immediate corrective feedback.

WWC Rating

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

Strengths: This study is a well-implemented randomized controlled trial.

Appendix A: Study details

Tran, Z. (2005). *Help with English Language Proficiency "HELP" program evaluation of sheltered instruction multimedia lessons* [White paper]. Retrieved from www.helpprogram.net.

Setting	The study was conducted in nine classrooms in four schools in three school districts in Colorado. Five of the classrooms were math classes, and four were English language arts (ELA) classes. Two of the three participating districts conducted the study in a single school, and the third district conducted the study in two schools in which students shared similar demographic characteristics and were exposed to the same curriculum.
Study sample	The original study sample consisted of 154 students in grades six and higher; 79 were assigned to the intervention condition and 75 to the comparison condition. Random assignment occurred prior to the start of the study, with students randomly assigned to each condition. At the time of assignment, each student was labeled by grade (e.g., ninth) and level of English language proficiency (e.g., intermediate—limited English proficient [LEP]).[3] During the pilot, six students left their schools for a variety of reasons (e.g., dropout, leaving the country, expulsion, etc.). The final study sample included 73 students in each condition. The mean grade level of the students in the intervention group was 7.7 (standard deviation 1.05) and 7.8 (standard deviation 1.26) for students in the comparison group. Across both groups, the majority of students were LEP.
Intervention group	Students in the intervention group received *HELP©*, an Internet-based supplemental curriculum intended to teach math concepts. The program focuses on English language learners, and Spanish-speakers in particular, by breaking down math terms into simpler concepts within the interactive lessons. In this study, both math and ELA classroom teachers participated in the intervention. Students in the intervention condition worked on the program in a computer lab during the school day for approximately 30 minutes per session. In one school, students worked on the program after school with teacher supervision.
Comparison group	Students in the comparison group participated in their school's standard math curriculum. They used the same core textbooks as the students receiving the intervention and shared the same curriculum and expectations. Students in the comparison group continued with the standard curriculum they were using before the study commenced during the period of time that students in the intervention group received instruction.
Outcomes and measurement	A single math achievement test was used as the pretest (early January 2005 administration) and posttest (late March 2005 administration). The items in the assessment were aligned to National Council of Teachers of Mathematics (NCTM) principles and standards for students in grades 6–8. For a more detailed description of this outcome measure, see Appendix B.
Support for implementation	Staff from Digital Directions International, the developer of the *HELP©* program, conducted training and supervision for teachers in all nine classrooms, as well for computer lab teachers and facilitators. In three out of the four schools participating in the study, Digital Directions International staff attended the first sessions when students in the intervention condition were trained on how to use and navigate *HELP©* lessons.
Reason for review	This study was identified for review by the WWC because it was cited as evidence in an Investing in Innovation (i3) grant proposal.

Appendix B: Outcome measure for the mathematics domain

Mathematics	
Math assessment	A third party specialist in assessment design created the items that were used in this assessment. The assessment items were aligned to National Council of Teachers of Mathematics (NCTM) principles and standards for grades 6–8. Math curriculum experts validated the pre-post parallel assessment measures to ensure they were mathematically correct, content neutral (in terms of religion, politics, culture, race, and sex), contained visual representation for ELLs (appropriate graphics, charts, and tables), and had clear answer choices (one correct answer with three plausible distracters). The items were also rated to ensure they effectively assessed student knowledge and understanding of specified learning objectives and balanced in their level of cognitive demand (easy, medium, and difficult).

Table Notes: In addition to the analysis of raw test scores, the author also presented information on the proportion of students who improved their test scores between the two assessment periods. Because this analysis was also based on the raw test score data, it does not qualify as a separate analysis of *HELP*© outcomes and is not included in this report.

Appendix C: Study findings for the mathematics 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	
Mathematics								
Math assessment	Grades 6 and higher	4 schools/ 146 students	12.17 (2.74)	9.29 (3.64)	2.88	0.89	+31	< 0.01
Domain average for mathematics						**0.89**	**+31**	**Statistically significant**

Table Notes: For mean difference, effect size, and improvement index values reported in the table, a positive number favors the intervention group and a negative number favors 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. The statistical significance of the study's domain average was determined by the WWC. This study is characterized as having a statistically significant positive effect because the single effect reported is positive and statistically significant.

Study Notes: The comparison group regression-adjusted mean was reported by the author in the original study. The WWC calculated the intervention group mean by adding the difference-in-differences adjusted estimate of the average impact of the program (i.e., difference in mean gains between the intervention and comparison groups) to the comparison group posttests mean. Please see the *WWC Handbook* for more information. The standard deviations were obtained in an email request to the author. No corrections for clustering or multiple comparisons were needed. The *p*-value presented here was reported in the original study. The study also presents subgroup results by grade, schooling level (middle school or high school), and by English language proficiency; however, there was insufficient information presented on these subgroups for them to meet WWC evidence standards, and therefore, subgroup findings are not included in this report.

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 English Language Learners topic area protocol, version 2.0. The WWC rating applies only to the results that were eligible under this topic area and met WWC standards without reservations or met WWC standards with reservations, and not necessarily to all results presented in the study.

[2] In addition to the analysis of raw test scores, the author also presented information on the proportion of students who improved their test scores between the two assessment periods. Because this analysis was also based on the raw test score data, it does not qualify as a separate analysis of *HELP*© outcomes. The author also reported subgroup results by grade, school level (i.e., middle school, high school), and English language proficiency level. However, no information was presented to assess attrition or baseline equivalence of the intervention and comparison subgroups, and as such, these contrasts are not included in this report.

[3] At the time of random assignment, the author placed the students in each condition into "pairs." The author did not exclude any data from any students (i.e., the author indicated that all pairs were included in the final analysis in an email correspondence), and the author did not indicate that his analysis incorporated any information about the pairing in impact estimation. As such, the WWC does not believe that the pairing of students described in this study affected the internal validity of the study or the estimate of the impact of the program.

Recommended Citation

U.S. Department of Education, Institute of Education Sciences, What Works Clearinghouse. (2012, October). *WWC review of the report: Help with English Language Proficiency "HELP" program evaluation of sheltered instruction multimedia lessons*. 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.