

# Sheltered Instruction Observation Protocol® (SIOP®)

No studies of *Sheltered Instruction Observation Protocol*® (*SIOP*®) that fall within the scope of the English Language Learners review protocol meet What Works Clearinghouse (WWC) evidence standards. The lack of studies meeting WWC evidence standards means that, at this time, the WWC is unable to draw any conclusions based on research about the effectiveness or ineffectiveness of *SIOP*® on English language learners. Additional research is needed to determine the effectiveness or ineffectiveness of this intervention.

## Program Description<sup>1</sup>

The *Sheltered Instruction Observation Protocol*® (*SIOP*®) is a framework for planning and delivering instruction in content areas such as science, history, and mathematics to English language learners as well as other students. The goal of *SIOP*® is to help teachers integrate academic language development into their lessons, allowing students to learn and practice English as it is used in the context of school, including the vocabulary used in textbooks and lectures in each academic discipline. Using this planning framework, teachers modify the way they teach so that the language they use to explain concepts and information is comprehensible to these students. *SIOP*® is intended to be applicable at levels of education from pre-K through community college. The *SIOP*® model consists of instructional strategies that cover eight aspects of lesson design and delivery: lesson preparation, building background, comprehensible input, strategies, interaction, practice and application, lesson delivery, and review and assessment. The instructional strategies address the academic and linguistics needs of English language learners. In most cases, teachers receive professional development on the *SIOP*® model before using it to modify their lessons. This review of *SIOP*® focuses on research that examines its impact on the learning of English language learners in grades K–8.

## Research<sup>2</sup>

The WWC identified 32 studies of *SIOP*® for English language learners that were published or released between 1983 and 2012.

Seven studies are within the scope of the English Language Learners review protocol but do not meet WWC evidence standards.

- Four studies did not establish that the comparison group was comparable to the intervention group prior to the start of the intervention. Three of these used a quasi-experimental design, and the other was a randomized controlled trial with high attrition.
- Three studies include only one unit—for example, school—in one condition, which makes it impossible to attribute the observed effect solely to *SIOP*®.

Twenty-two studies are out of the scope of the English Language Learners review protocol because they have an ineligible study design.

- Eighteen studies do not use a comparison group design, a regression discontinuity design, or a single-case design.
- Four studies are literature reviews or meta-analyses.

Three studies are out of the scope of the English Language Learners review protocol for reasons other than study design.

- Two studies do not use a sample aligned with the protocol—the sample includes less than 50% English language learners or does not fall within the acceptable grade range.
- One study does not implement the intervention in a way that falls within the scope of the review—the intervention is bundled with other components.

### References

#### Studies that do not meet WWC evidence standards

- Adkins, J. N. (2010). *Speaking their language: A quasi-experimental study on effective English as a second language programs* (Doctoral dissertation, Capella University). Available from ProQuest Dissertations and Theses database. (UMI No. 3378810) The study does not meet WWC evidence standards because the measures of effectiveness cannot be attributed solely to the intervention—there was only one unit assigned to one or both conditions.
- Echevarría, J., Richards-Tutor, C., Canges, R., & Francis, D. (2011). Using the SIOP model to promote the acquisition of language and science concepts with English learners. *Bilingual Research Journal*, 34(3), 334–351. The study does not meet WWC evidence standards because it is a randomized controlled trial in which the combination of overall and differential attrition rates exceeds WWC standards for this area, and the subsequent analytic intervention and comparison groups are not shown to be equivalent.
- Echevarría, J., Short, D., & Powers, K. (2006). School reform and standards-based education: A model for English-language learners. *Journal of Educational Research*, 99(4), 195–210. The study does not meet WWC evidence standards because it uses a quasi-experimental design in which the analytic intervention and comparison groups are not shown to be equivalent.
- Additional sources:**
- Echevarría, J., Short, D., & Powers, K. (2003). *School reform and standards-based education: How do teachers help English language learners?* Technical report. Santa Cruz, CA: Center for Research on Education, Diversity & Excellence.
- Echevarría, J., Short, D., & Powers, K. (2008). Making content comprehensible for non-native speakers of English: The SIOP model. *International Journal of Learning*, 14(11), 41–50.
- Mcintyre, E., Kyle, D., Chen, C., Munoz, M., & Beldon, S. (2010). Teacher learning and ELL reading achievement in sheltered instruction classrooms: Linking professional development to student development. *Literacy Research & Instruction*, 49(4), 334–351. The study does not meet WWC evidence standards because it uses a quasi-experimental design in which the analytic intervention and comparison groups are not shown to be equivalent.
- Miner, K. A. (2006). Fostering teacher efficacy for teaching elementary English language learning students using the Sheltered Instruction Observation Protocol and systems-level supports: A case study. *Dissertation Abstracts International*, 67(07A), 160-2411. The study does not meet WWC evidence standards because the measures of effectiveness cannot be attributed solely to the intervention—there was only one unit assigned to one or both conditions.
- Read, F. D. (2009). The impact of the Sheltered Instruction Observation Protocol (SIOP) on the instructional practices of elementary school teachers and on the reading achievement of English language learners. *Dissertation Abstracts International Section A*, 69(12-A), 4605. The study does not meet WWC evidence standards because it uses a quasi-experimental design in which the analytic intervention and comparison groups are not shown to be equivalent.
- Short, D. J., Fidelman, C. G., & Louguit, M. (2012). Developing academic language in English language learners through sheltered instruction. *TESOL Quarterly*, 46(2), 334–361. The study does not meet WWC evidence standards because the measures of effectiveness cannot be attributed solely to the intervention—there was only one unit assigned to one or both conditions.

#### Studies that are ineligible for review using the English Language Learners Evidence Review Protocol

- Batt, E. G. (2010). Cognitive coaching: A critical phase in professional development to implement sheltered instruction. *Teaching and Teacher Education*, 26(4), 997–1005. The study is ineligible for review because it does not use a comparison group design or a single-case design.

- Collins, J. L. (2009). *What's good for the goose is good for the gander: Implementing the SIOP model into an urban elementary classroom of African American students* (Doctoral dissertation, University of North Carolina at Charlotte). Available from ProQuest Dissertations and Theses database. (UMI No. 3388956) The study is ineligible for review because it does not use a comparison group design or a single-case design.
- DelliCarpini, M. (2008). Success with ELLs. *English Journal*, 98(1), 98–101. The study is ineligible for review because it does not use a comparison group design or a single-case design.
- Dennis, R. L. (2004). The effects of the Sheltered Instruction Observation Protocol model on the vocabulary development of English language learners in the content area. *Masters Abstracts International*, 43(04), 101-1073. The study is ineligible for review because it does not use a comparison group design or a single-case design.
- Dietzler, H. T. (2008). *Comparing the influence of teaching behaviors on reading achievement of English language learners* (Doctoral dissertation, East Carolina University). Available from ProQuest Dissertations and Theses database. The study is ineligible for review because it does not use a comparison group design or a single-case design.
- Doker, C. A. (2010). *Elementary teachers' perceptions regarding teaching English language learners in the social studies classroom* (Doctoral dissertation, Walden University). Available from ProQuest Dissertations and Theses database. (UMI No. 3397340) The study is ineligible for review because it does not use a comparison group design or a single-case design.
- Echevarría, J. (2012). *Effective practices for increasing the achievement of English learners*. Washington, DC: Center for Research on the Educational Achievement and Teaching of English Language Learners. Retrieved from <http://www.cal.org/create/publications/briefs/effective-practices-for-increasing-the-achievement-of-english-learners.html> The study is ineligible for review because it is a secondary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.
- Echevarría, J., & Short, D. (2011). *The SIOP® model: A professional development framework for comprehensive school-wide intervention*. Washington, DC: Center for Research on the Educational Achievement and Teaching of English Language Learners. Retrieved from <http://www.cal.org/create/publications/briefs/professional-development-framework.html> The study is ineligible for review because it is a secondary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.
- Eldridge, E. (2010). *The quest for educational equity with developing bilinguals at a majority Mexican immigrant urban high school: Opportunities and obstacles* (Doctoral dissertation, University of Colorado at Boulder). Available from ProQuest Dissertations and Theses database. (UMI No. 3403916) The study is ineligible for review because it does not use a comparison group design or a single-case design.
- Engel, S. (2007). *SIOP and the struggling reader: In what ways could the use of the Sheltered Instruction Observational Protocol (SIOP) be appropriate for struggling readers?* Unpublished master's thesis, University of Wisconsin–Green Bay. The study is ineligible for review because it does not use a comparison group design or a single-case design.
- Friend, J., Most, R., & McCrary, K. (2009). The impact of a professional development program to improve urban middle-level English language learner achievement. *Middle Grades Research Journal*, 4(1), 53–75. The study is ineligible for review because it does not use a comparison group design or a single-case design.
- Gammon, M. L. (2004). *Bilingual education: Program development and implementation grant: Final evaluation*. Arizona/USA. The study is ineligible for review because it does not use a comparison group design or a single-case design.
- Guarino, A. J., Echevarría, J., Short, D., Schick, J. E., Forbes, S., & Rueda, R. (2001). The Sheltered Instruction Observation Protocol: Reliability and validity assessment. *Journal of Research in Education*, 11(1), 138–140. The study is ineligible for review because it does not use a comparison group design or a single-case design.
- Hessee, G. M. (2011). *Coaching within a community of practice: The effects of one urban school's collaborative professional development model on teacher instruction and student achievement* (Doctoral dissertation, University

- of Colorado at Denver). Available from ProQuest Dissertations and Theses database. (UMI No. 3492279) The study is ineligible for review because it does not use a comparison group design or a single-case design.
- Himmel, J., Short, D. J., Richards, C., & Echevarría, J. (2009). *Using the SIOP model to improve middle school science instruction*. Washington, DC: Center for Research on the Educational Achievement and Teaching of English Language Learners. Retrieved from <http://www.cal.org/create/publications/briefs/using-the-siop-model-to-improve-middle-school-science-instruction.html>. The study is ineligible for review because it is a secondary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.
- Honigsfeld, A., & Cohan, A. (2006, April). *Lesson study meets SIOP: Linking two successful professional development models*. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA. (ERIC Document Reproduction Service No. ED491686). The study is ineligible for review because it does not implement the intervention in a way that falls within the scope of the review—the intervention is bundled with other components.
- Additional source:**
- Honigsfeld, A., & Cohan, A. (2008). The power of two: Lesson study and SIOP help teachers instruct ELLs. *Journal of Staff Development*, 29(1), 24–26.
- O’Neal, D., Ringler, M. C., & Lys, D. B. (2009). Skeptics to partners: University teams with district to improve ELL instruction. *Journal of Staff Development*, 30(4), 52–55. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample includes less than 50% English language learners.
- Pascopella, A. (2008). Missouri district brings struggling learners up to snuff. *District Administration*, 44(13), 73. The study is ineligible for review because it does not use a comparison group design or a single-case design.
- Rodriguez Moux, S. (2010). *Teacher’s perceptions of Sheltered Instruction Observation Protocol for teaching young English language learners: A qualitative case study* (Doctoral dissertation, Walden University). Available from ProQuest Dissertations and Theses database. (UMI No. 3398868) The study is ineligible for review because it does not use a comparison group design or a single-case design.
- Short, D., Echevarría, J., & Richards-Tutor, C. (2011). Research on academic literacy development in sheltered instruction classrooms. *Language Teaching Research*, 15(3), 363–380. The study is ineligible for review because it is a secondary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.
- Short, D. J., & Echevarría, J. (1999). *The Sheltered Instruction Observation Protocol: A tool for teacher-research collaboration and professional development*. Educational Practice Report No. 3. University of California, Santa Cruz: Center for Research on Education, Diversity and Excellence. The study is ineligible for review because it does not use a comparison group design or a single-case design.
- Smiley-Blanton, R. (2011). Instructional practices that promote reading proficiency for English language learners in grades 3 and 5. *Dissertation Abstracts International Section A: Humanities and Social Sciences*, 71(10-A), 3535. The study is ineligible for review because it does not use a comparison group design or a single-case design.
- Watkins, N. M., & Lindahl, K. M. (2010). Targeting content area literacy instruction to meet the needs of adolescent English language learners. *Middle School Journal*, 41(3), 23–32. The study is ineligible for review because it does not use a comparison group design or a single-case design.
- Whittier, L. E., & Robinson, M. (2007). Teaching evolution to non-English proficient students by using Lego Robotics. *American Secondary Education*, 35(3), 19–28. The study is ineligible for review because it does not use a comparison group design or a single-case design.
- Williams, S. L. L. (2012). Analysis of effectiveness of sheltered instruction observation protocol model at the high school level in pilot year of implementation (Doctoral dissertation, Wingate University). Available from ProQuest Dissertations and Theses database. (UMI No. 3508491) The study is ineligible for review because it does not use a sample aligned with the protocol—the sample is not within the specified age or grade range.

### Endnotes

<sup>1</sup> The descriptive information for this program was obtained from a publicly available source: the program's website (<http://www.cal.org/siop>, downloaded November 2012). The WWC requests developers to review the program description sections for accuracy from their perspective. The program description was provided to the developer in November 2012, and we incorporated feedback from the developer. Further verification of the accuracy of the descriptive information for this program is beyond the scope of this review. The literature search reflects documents publicly available by June 2012.

<sup>2</sup> This report has been updated to include reviews of 25 studies that have been released since 2009. (The previous report was released in June 2009.) Of the additional studies, 20 were not within the scope of the protocol, and five were within the scope of the protocol but did not meet evidence standards. The current disposition for Gammon (2004) differs from the previous intervention report because version 2.1 of the English Language Learners protocol now accepts studies with samples of at least 50% English language learners, whereas in the past, the cutoff was 60%. However, although the sample is appropriate, the study remains ineligible due to issues with the design as described in the current disposition. A complete list and disposition of all studies reviewed are provided in the references. The studies in this report were reviewed using the evidence standards from the WWC Procedures and Standards Handbook (version 2.1), along with those described in the English Language Learners review protocol (version 2.2). The evidence presented in this report is based on available research. Findings and conclusions may change as new research becomes available.

### Recommended Citation

U.S. Department of Education, Institute of Education Sciences, What Works Clearinghouse. (2013, February). *English Language Learners intervention report: Sheltered Instruction Observation Protocol® (SIOP®)*. Retrieved from <http://whatworks.ed.gov>.



### Glossary of Terms

<b>Attrition</b>	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.
<b>Clustering adjustment</b>	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.
<b>Confounding factor</b>	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.
<b>Design</b>	The design of a study is the method by which intervention and comparison groups were assigned.
<b>Domain</b>	A domain is a group of closely related outcomes.
<b>Effect size</b>	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.
<b>Eligibility</b>	A study is eligible for review and inclusion in this report if it falls within the scope of the review protocol and uses either an experimental or matched comparison group design.
<b>Equivalence</b>	A demonstration that the analysis sample groups are similar on observed characteristics defined in the review area protocol.
<b>Extent of evidence</b>	An indication of how much evidence supports the findings. The criteria for the extent of evidence levels are given in the WWC Procedures and Standards Handbook (version 2.1).
<b>Improvement index</b>	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.
<b>Multiple comparison adjustment</b>	When a study includes multiple outcomes or comparison groups, the WWC will adjust the statistical significance to account for the multiple comparisons, if necessary.
<b>Quasi-experimental design (QED)</b>	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.
<b>Randomized controlled trial (RCT)</b>	A randomized controlled trial (RCT) is an experiment in which investigators randomly assign eligible participants into intervention and comparison groups.
<b>Rating of effectiveness</b>	The WWC rates the effects of an intervention in each domain based on the quality of the research design and the magnitude, statistical significance, and consistency in findings. The criteria for the ratings of effectiveness are given in the WWC Procedures and Standards Handbook (version 2.1).
<b>Single-case design</b>	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.
<b>Standard deviation</b>	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 tend to be spread out over a large range of values.
<b>Statistical significance</b>	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% ( $p < 0.05$ ).
<b>Substantively important</b>	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.