
Thank you for your request to our REL Reference Desk regarding research on best practices for content area instruction strategies for English learner students. Ask A REL is a collaborative reference desk service provided by the ten regional educational laboratories (REL) that, by design, functions much in the same way as a technical reference library. It provides references, referrals, and brief responses in the form of citations on research based education questions.

The information below represents the most rigorous research available. Researchers consider the type of methodology and give priority to research reports that employ well described and thorough methods. The resources were also selected based on the date of the publication with a preference for research from the last ten years. Additional criteria for inclusion include the source and funder of the resource.

Question: *What research exists regarding best practices for content area instruction strategies for English Learner (EL) students? (particularly in math and science)*

Key words and search strings used in the search: *English learners AND content area instruction; instruction strategies AND English learner students AND math OR science*

Search databases and websites:

1. ERIC: <http://eric.ed.gov/>
2. JSTOR: <http://www.jstor.org/action/showAdvancedSearch>
3. Google Scholar: www.google.com/scholar
4. Institute of Education Sciences (IES) Resources: <http://ies.ed.gov/pubsearch/>
5. What Works Clearinghouse: <http://ies.ed.gov/ncee/wwc/>

Citations Retrieved: (NOTE: Abstracts and executive summaries are copied directly from the reports when possible to ensure accuracy):

Baker, S., Lesaux, N., Jayanthi, M., Dimino, J., Proctor, C. P., Morris, J., Gersten, R., Haymond, K., Kieffer, M. J., Linan-Thompson, S., & Newman-Gonchar, R. (2014). Teaching Academic Content and Literacy to English Learners in Elementary and Middle School. IES Practice Guide. NCEE 2014-4012. *What Works Clearinghouse*. Retrieved from: <http://eric.ed.gov/?id=ED544783>.

Abstract/Summary: As English learners face the double demands of building knowledge of a second language while learning complex grade-level content, teachers must find effective ways to make challenging content comprehensible for students. This updated English learner practice guide, "Teaching Academic Content and Literacy to English Learners in Elementary and Middle School," provides four recommendations for teaching complex content to English learners while simultaneously building academic language and writing and oral language proficiency. This updated practice guide builds on the work of the first practice guide on English learners, expands the grade range from K-5 to K-8, and incorporates instruction in

mathematics, science, and social studies, as well as literacy. With techniques found in this guide, teachers can effectively address English learners' content and language needs by systematically--and at times explicitly--building students' English language and literacy, while teaching history, mathematics, science, and other disciplines. The four recommendations include concrete guidance on: (1) Teaching English learners academic vocabulary intensively within the context of an engaging piece of informational text; (2) Helping English learners make sense of the content area material; (3) Supporting English learners as they learn to generate well-organized essays that are progressively longer and more complex; and (4) Providing struggling English learners with high-quality instructional interventions in reading and English language development. Like all other practice guides, this updated practice guide is based on research that has met the rigorous standards set by the What Works Clearinghouse, capitalizing on recently conducted research on content learning and academic language. The research base for this guide was identified through a comprehensive search for studies evaluating instructional practices for teaching academic content and literacy to English learners in K-8. Appended are: (1) Postscript from the Institute of Education Sciences; (2) About the Panel and Research Staff; (3) Disclosure of Potential Conflicts of Interest; and (4) Rationale for Evidence Ratings. A glossary is also included.

Cox, R., O'Brien, K., Walsh, M., & West, H. (2015). Working with multilingual learners and vocabulary knowledge for secondary schools: Developing word consciousness. *English in Australia*, 50(1), 77. Retrieved from: <http://eric.ed.gov/?id=EJ1064902>.

Abstract/Summary: This paper reports on a 10 week vocabulary focused intervention based on the Word Generation program (Snow, 2002, 2010; SERP, 2011) in primary and secondary schools, which demonstrated clear improvements, particularly with students who are English as another language/dialect (EAL/D) learners. Teachers across English, Science, Maths and Social Sciences developed professional learning communities as they collaboratively planned the systematic introduction and elaboration of abstract academic vocabulary in each of their curriculum areas.

DiCerbo, P. A., Anstrom, K. A., Baker, L. L., & Rivera, C. (2014). A review of the literature on teaching academic English to English language learners. *Review of Educational Research*, 84(3), 446-482. Retrieved from: <http://eric.ed.gov/?id=EJ1034269>.

Abstract/Summary: Academic English (AE) refers to the language used in school to help students acquire and use knowledge. This article reviews current literature to determine what is known about the nature of AE within the context of K-12 schooling. It describes how AE is conceptualized in the education research literature, how these conceptualizations are realized in instructional practices, and the implications of these conceptualizations for teacher education and professional development. The student population that is the primary focus of the article is

English language learners, but the findings have implications for all students who struggle with learning AE. The article raises critical challenges in defining and operationalizing AE for instruction and suggests areas for further inquiry.

Lara-Alecio, R., Tong, F., Irby, B. J., Guerrero, C., Huerta, M., & Fan, Y. (2012). The effect of an instructional intervention on middle school English learners' science and English reading achievement. *Journal of Research in Science Teaching*, 49(8), 987-1011.
Retrieved from: <http://eric.ed.gov/?id=EJ979397>.

Abstract/Summary: This study examined the effect of a quasi-experimental project on fifth grade English learners' achievement in state-mandated standards-based science and English reading assessment. A total of 166 treatment students and 80 comparison students from four randomized intermediate schools participated in the current project. The intervention consisted of on-going professional development and specific instructional science lessons with inquiry-based learning, direct and explicit vocabulary instruction, integration of reading and writing, and enrichment components including integration of technology, take-home science activities, and university scientists mentoring. Results suggested a significant and positive intervention effect in favor of the treatment students as reflected in higher performance in district-wide curriculum-based tests of science and reading and standardized tests of oral reading fluency.

Referrals

Federally Funded Resources:

- Institute of Education Sciences (IES), public search engine available at: <http://ies.ed.gov/pubsearch/>
- What Works Clearinghouse: <http://ies.ed.gov/ncee/wwc/>
- The Office of English Language Acquisition, Language Enhancement, and Academic Achievement for Limited English Proficient Students (OELA): <http://www2.ed.gov/about/offices/list/oela/index.html>
- The National Clearinghouse for English Language Acquisition & Language Instruction Educational Programs (NCELA): <http://www.ncela.us/>

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