

Science curriculum tailored to English language learners boosts student achievement

March 11 2016

In a large-scale study involving more than 6,000 fifth graders, an innovative science curriculum was found to have a positive impact on science learning for students with different levels of English proficiency.

The study, led by NYU Steinhardt School of Culture, Education, and Human Development and published in the *American Educational Research Journal*, evaluated the effects of Promoting Science Among English Language Learners (P-SELL), a fifth-grade science curricular and professional development intervention designed with English [language learners](#) (ELLs) in mind.

"Our study was motivated by the urgent need for English language learners to have access to equitable learning opportunities so that they can be successful in school and be ready for college and careers," said Lorena Llosa, associate professor of education at NYU Steinhardt and a lead author on the study.

Census data from 2013 show that 22 percent of U.S. students speak a language other than English at home. Despite the growth in diversity in the classroom, few teachers report feeling prepared to provide science instruction for diverse student groups, including ELLs. In addition, achievement gaps in science between ELLs and non-ELLs remain largely consistent and wide. "These factors highlighted the need for educational interventions to promote science learning for all students, including English language learners," said Okhee Lee, professor of childhood education at NYU Steinhardt and a lead author on the study.

The P-SELL intervention, developed by Lee, consists of a yearlong science curriculum aligned with state science standards for fifth grade, as well as professional development for teachers. The curriculum is designed to promote students' scientific inquiry and understanding while using language development strategies.

The curriculum for students is built around state science standards and focuses on four areas: the nature of science, earth and space science, life science, and physical science. By providing more structure through teacher-directed instruction in early chapters and an open-ended approach in later chapters, the curriculum fosters students' exploration.

In addition, the P-SELL curriculum addresses the learning needs of ELLs by providing guidance for English language development. Each chapter begins and concludes with key concepts in the three primary languages spoken by students in the schools studied: English, Spanish, and Haitian Creole. The lessons introduce science concepts by connecting them with prior knowledge from outside the classroom and knowledge from previous chapters. Student discussions and opportunities for writing are incorporated throughout.

P-SELL also supports teachers through a teachers' guide to assist with implementing the curriculum and [professional development](#) workshops during the summer and throughout the school year.

The study was conducted in three school districts in Florida. According to the Florida Department of Education, Florida ELLs total more than 265,000 and surpass most states in the nation.

A total of 66 elementary schools participated, with half randomly assigned to implement the P-SELL curriculum, and half using a district-adopted science curriculum. Both groups of schools spent similar amounts of science instructional time each week, and the average length

of science classes was comparable.

The students' science learning was measured using both the state science test and a researcher-developed science assessment. Students in the P-SELL schools outperformed their peers in schools using the district-adopted science [curriculum](#) on both the researcher-developed science assessment and the state science test. Analyses showed that P-SELL had a positive and significant effect for each language proficiency group (ELLs, ELLs recently reclassified as proficient in English, former ELLs reclassified as proficient in English more than two years ago, and non-ELLs) on the researcher-developed test. P-SELL also had a positive effect for former ELLs and non-ELLs on the state science test, but for ELLs and recently reclassified ELLs, the effect was not statistically significant.

"The findings of our study provide strong evidence that an intervention that promotes [science](#) inquiry and [language development](#) for English language learners can be scaled up, implemented across educational settings, and result in improvements for all students," said Llosa.

Future research will look at whether the positive effects of P-SELL can be sustained over time, and what the effects are on [students](#) of varying levels of English proficiency over time.

Provided by New York University

Citation: Science curriculum tailored to English language learners boosts student achievement (2016, March 11) retrieved 25 April 2024 from <https://phys.org/news/2016-03-science-curriculum-tailored-english-language.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--