

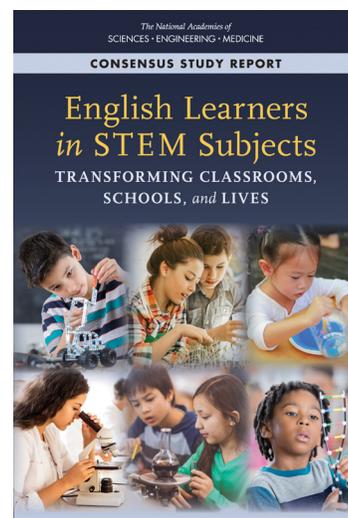
English Learners in STEM Subjects: Transforming Classrooms, Schools, and Lives

Highlights for Families and Communities

English learners (ELs) comprise a diverse and talented pool of learners who bring valuable perspectives and resources to science, technology, engineering, and mathematics (STEM) classrooms that reflect their experiences with their home languages, homes and communities, as well as STEM schooling in other countries. Yet, many of these students' lack access to rigorous STEM learning opportunities, in part due to incorrect assumptions that English proficiency is a prerequisite for students to learn STEM content.

English Learners in STEM Subjects: Transforming Classrooms, Schools, and Lives (2018), a report from the National Academies of Sciences, Engineering, and Medicine, emphasizes the importance of teaching language and STEM content in an interconnected way and identifies factors that affect ELs' access to rigorous, grade-appropriate STEM content learning opportunities and their success in STEM.

The report presents the considerable evidence that ELs can participate in, contribute to, and succeed in STEM subjects with appropriate curricular and instructional support. This brief highlights information and recommendations from the report that are relevant to families and communities including parent-school groups, community leaders, and community organizations—such as museums, businesses, and universities.



ENGLISH LEARNERS AND STEM

Students do not need to be proficient in English to learn STEM content. They can develop English language skills and learn about STEM at the same time with appropriate instruction. In fact, STEM subjects can provide excellent learning opportunities, because they offer meaningful contexts for students to use language. **All children, regardless of their home culture and first language, arrive at school with rich knowledge and skills that can be resources for STEM learning.**

FAMILY AND COMMUNITY INVOLVEMENT

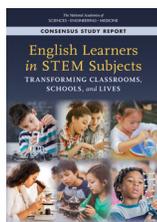
Families and communities should partner with schools in their efforts to engage ELs in STEM learning. Research shows that one of the strongest factors in whether ELs stay in school and eventually attend college is an ongoing connection between the home and school. And the interactions should go beyond families and caregivers participating in open houses and parent-teacher conferences. Caregivers should feel comfortable talking with their child's teachers on a regular basis, whether it be about their child's performance in class or seeking guidance about additional STEM-relevant opportunities their child could participate in. Parent-school groups should advocate for schools to provide welcoming environments, which includes providing caregivers with resources they may need (e.g., interpreters).

Community organizations such as museums, science centers, parks, and businesses can partner with districts and schools to help strengthen the quality and amount of science instruction provided to ELs. These partnerships offer opportunities to deepen students' and their families understanding of STEM. They can also provide access to resources, mentoring opportunities, and internships that expose ELs to workplace experiences and support them in developing the skills and practices they need to succeed in STEM education after high school.

SUPPORTIVE SCHOOLS AND DISTRICTS

Families should encourage schools and districts to provide information about instructional programs in STEM and the different academic and occupational opportunities. It is known that schools that are successful in graduating ELs who are ready for college and careers offer students a rigorous college preparatory program that can enrich students' motivation, interests, and learning in STEM. These programs may include a number of important opportunities, such as visits to STEM institutions (e.g., museums), college and career planning, and financial aid courses. Parent-school groups should advocate for schools to not only share this information with caregivers but ensure that ELs are provided with equal opportunities to participate in such rigorous programs. As schools share relevant information, caregivers should feel empowered to support their child's academic learning and achievement.

Families and communities should advocate for strong collaboration among schools and districts, communities, and families. It is important for schools and districts to recognize and draw upon the rich resources present in the community and in students' homes. Parent-school groups should partner with schools to develop multicultural programming so that schools will have opportunities to better understand the assets and needs of families and communities. Caregivers should feel empowered to collaborate with schools and teachers in the development of STEM content students receive. The co-creation of materials positions caregivers and communities as important partners in students' STEM learning.



English Learners in STEM Subjects: Transforming Classrooms, Schools, and Lives (2018)

Available:

<https://nationalacademies.org/ELinSTEM>

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For More Information . . . This Highlights for District and School Leaders was prepared by the Board on Science Education based on the Consensus Study Report *English Learners in STEM Subjects: Transforming Classrooms, Schools, and Lives* (2018). The study was sponsored by the National Science Foundation. Any opinions, findings, conclusions, or recommendations expressed in this publication do not necessarily reflect the views of any organization or agency that provided support for the project. Copies of the Consensus Study Report are available from the National Academies Press, (800) 624-6242; <http://www.nas.edu/ELinSTEM>.

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