

## Strengthening Mathematics Instruction for English Learners/Multilingual Learners

This resource highlights key ideas about why it is important to support English learners/multilingual learners for Connecticut and beyond and provides practical strategies for use in the classroom.

### By the Numbers: ELs/MLs in Connecticut

Connecticut's EL/ML student population is growing quickly, but many students may lack sufficient opportunities to learn and succeed in math class, especially in the critical middle grades.<sup>1</sup>

When compared with their peers who have never been English learners, the data<sup>2</sup> in the Connecticut districts with the highest numbers of ELs/MLs show that:

#### Terminology

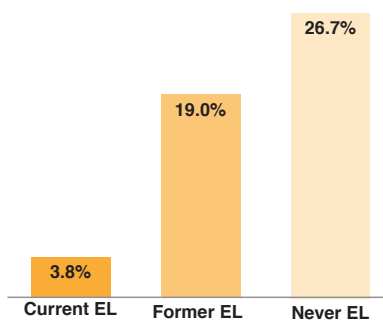
Connecticut uses **English learners/multilingual learners (ELs/MLs)** to acknowledge federal definitions, while emphasizing multilingualism as a student strength. (This [overview from IES](#) has additional information on terminology.)

**Current ELs** have been identified as an EL and have not yet met Connecticut's English Mastery Standard and demonstrated English language proficiency.

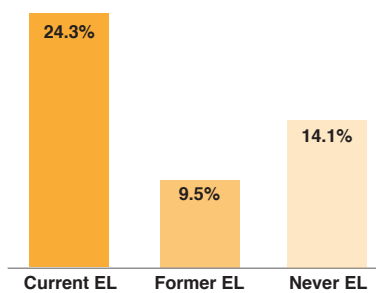
**Former ELs** were identified as an EL but have since met Connecticut's English Mastery Standard and demonstrated English language proficiency.

**Never ELs** have never been identified as an EL during their time as a Connecticut public school student.

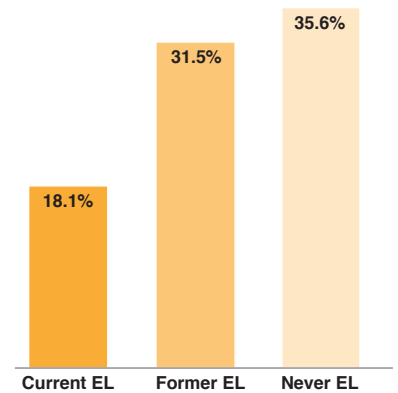
**Rates of math proficiency scores are lower for ELs/MLs than their peers on the grade 8 Smarter Balanced assessment.**



**Grade 9 math failure rates are higher for current ELs/MLs than their peers.**



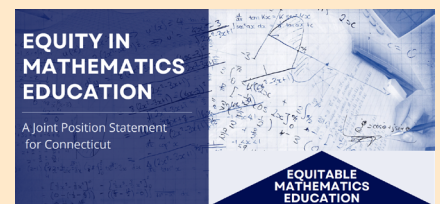
**Advanced math course participation rates are lower for ELs/MLs than their peers.**



Data based on 2024/2025 grade 8 mathematics Smarter Balanced results from 23 Connecticut districts with 500 or more ELs/MLs.

### Connecticut Equity in Mathematics Education

The [Connecticut Equity in Mathematics Education Statement](#) calls for supporting students' math identities by ensuring all students see themselves as capable math learners, reviewing systems that sort students, limit opportunities, and lower expectations, and ensuring a focus on strengths while eliminating deficit perspectives.



# Strengthening ELs/MLs' Math Learning Experiences

Research-based strategies can strengthen access to mathematical learning opportunities and mathematical practices for all students, particularly ELs/MLs.

## 1 Define language objectives for students.

Use objectives to support decisions about instructional planning by:

- **Planning both content and language objectives for lessons.**<sup>3</sup>
- Considering **which modes of communication**,<sup>4</sup> including reading, writing, speaking, or listening, students will need to use during the lesson.



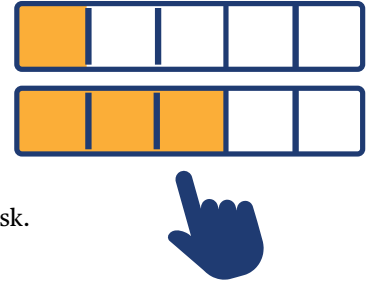
### Resources to learn more:

- [Developing and Writing Language Objectives](#)
- [Language Objectives: The Key to Effective Content Area Instruction for English Learners](#)

## 2 Design culturally responsive lessons and support students' language access.

Ensure students can access instructions and word problems<sup>5,6</sup> by:

- **Beginning with students' funds of knowledge**—for example, about cognates and different algorithms.
- **Acting out or showing pictures or videos** to demonstrate a word problem task context.
- **Using a Three Reads strategy** to introduce word problems or get students started on a task.
- **Supporting students to use visual representations**, such as tape diagrams, geometric figures, and number lines, to represent key quantities or ideas in a math task.



### Resources to learn more:

- [Middle Grades Mathematics Instruction for Multilingual Learners: Strategies for Success](#)  
See Setting Up Students for Success (Acting Out and Three Reads), and Facilitating Problem Solving Through Diagramming.
- [Principles for the Design of Mathematics Curricula: Promoting Language and Content Development](#)  
See the list of math language routines, including the Three Reads strategy and other strategies for supporting access.
- [Algebra for All! Preparing Students for Success](#)  
Blog post with a description of the Three Reads and Acting Out strategies in action.

### 3 Facilitate students' communication about their thinking.

**Create multiple opportunities** for students to share mathematical thinking in pairs, small groups, and the full group **using a variety of modes of communication.**<sup>7,8</sup>

- **Support students to describe their thinking however they can**—this could include informal language, home languages, gesturing, use of visual representations, and more.
- **Help students bridge from more informal language to academic language** using strategies such as revoicing or modeling specific language use.
- **Embed exploration of academic language into math lessons** in which students need that language through exploration of definitions, cognates, and examples of key vocabulary.
- **Create a word bank or word wall with students** while working on the task to show definitions or examples and to learn more about which words and phrases students find important or confusing.
- **Provide sentence starters or stems** that introduce structures used in math (for example, if-then comparison statements, agree/disagree) or that support precision in language.



#### Resources to learn more:

- [Middle Grades Mathematics Instruction for Multilingual Learners](#)  
See Promoting Participation in Mathematical Discourse.
- [Principles for the Design of Mathematics Curricula: Promoting Language and Content Development](#)  
See the list of math language routines, which includes strategies that can support students in sharing their mathematical thinking.
- Recommendation 2 in [Teaching Academic Content and Literacy to English Learners in Elementary and Middle School](#)  
See Recommendation 2, which emphasizes integrating support for communication into content areas (such as mathematics).

## Additional Resources in Connecticut



The [Supporting Multilingual Learners/English Learners \(ML/EL\) in Math](#) collection provides a set of vetted resources to support work with ELs/MLs.

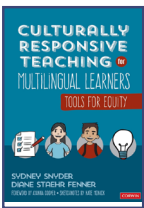


Connecticut's [Model Curriculum Units](#) for mathematics each include embedded guidance about implementing lessons in ways that can support ELs/MLs' learning experiences.



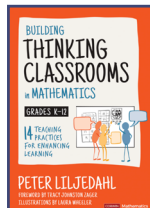
[Connecticut Equity in Mathematics Education](#)

## Additional Reading



***Culturally Responsive Teaching for Multilingual Learners*** by Sydney Snyder and Diane Staehr Fenner

This book provides comprehensive information and reflection questions focused on culturally responsive teaching, particularly for EL/ML students.



***Building Thinking Classrooms*** by Peter Liljedahl

This book provides strategies for all students to promote mathematical thinking and communication, including ELs/MLs.

## References

1. National Mathematics Advisory Panel (2008). *Foundations for Success: The Final Report of the National Mathematics Advisory Panel*. U.S. Department of Education.
2. Data shared by the Connecticut State Department of Education (2024).
3. Staples, M., Truxaw, M. P., & Cruz, V. (2020). Developing and Writing Language Objectives. *Mathematics Teacher: Learning and Teaching PK-12 MTLT*, 113(10), 828-834. Retrieved November 14, 2024, from <https://doi.org/10.5951/MTLT.2019.0219>.
4. WIDA. (2020). *WIDA English language development standards framework, 2020 edition: Kindergarten-grade 12*. Board of Regents of the University of Wisconsin System.
5. Baker, S., Geva, E., Kieffer, M. J., Lesaux, N., Linan-Thompson, A., Morris, J., Proctor, C. P., & Russel, R. (2014). *Teaching academic content and literacy to English learners in elementary and middle school* (NCEE 2014-4012). Washington, DC: National Center for Education Evaluation and Regional Assistance (NCEE), Institute of Education Sciences, U.S. Department of Education.
6. WIDA. (2020). *WIDA English language development standards framework, 2020 edition: Kindergarten-grade 12*. Board of Regents of the University of Wisconsin System.
7. Chval, K., Smith, E., Trigos-Carrillo, L. & Pinnow, R. J. (2021). *Teaching math to multilingual students, Grades K-8: Positioning English learners for success*. Corwin.
8. Baker, S., Geva, E., Kieffer, M. J., Lesaux, N., Linan-Thompson, A., Morris, J., Proctor, C. P., & Russel, R. (2014). *Teaching academic content and literacy to English learners in elementary and middle school* (NCEE 2014-4012). Washington, DC: National Center for Education Evaluation and Regional Assistance (NCEE), Institute of Education Sciences, U.S. Department of Education.



February 2025

REL Northeast & Islands works in partnership with state departments of education, local schools and districts, and other education stakeholders to develop and use research that improves outcomes for students.

Learn more at <https://ies.ed.gov/ncee/rel/region/northeast>.

This document was prepared under Contract 91990022C0013 by Regional Educational Laboratory Northeast & Islands, administered by Education Development Center. The content does not necessarily reflect the views or policies of IES or the U.S. Department of Education, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.