

Defining High-Quality Instructional Materials for Mathematics

Centering the Assets and Needs of
Multilingual Learner and English Learner Students

**The High Quality Instructional Materials
Learning Partners Coalition (HQIM-LPC)**

November 2023



Background

The High-Quality Instructional Materials Learning Partners Coalition (HQIM-LPC), formed in 2021, is part of an ongoing effort to build the capacity and knowledge of a broad set of education, policy, and advocacy organizations seeking to learn about and inform the selection of high-quality instructional materials as a lever for educational equity. The HQIM-LPC, comprising Californians Together, The Education Trust-West, English Learners Success Forum, Loyola Marymount University Center for Equity for English Learners, the Partnership for Los Angeles Schools, the San Joaquin County Office of Education, and UnboundEd, presents here a common definition of high-quality instructional materials for mathematics. The organizations in this coalition prioritize support and access for many historically and presently underserved student groups in the education sector, including Black, Latinx, and multilingual learner (ML) and English Learner (EL) students.¹ In this definition document, we focus on these priority student groups.

Our coalition is focused on mathematics instructional materials in California, where approximately 19% of students are categorized as English Learners.² High-quality instructional materials that embed best practices for supporting this student population are critical. It is essential that publishers, policymakers, and local curriculum decision-makers consider whether materials integrate the assets and needs of ML/EL³ students, as well as the research-based strategies to support their learning.

Definition Introduction

High-quality instructional materials (HQIM) are a crucial component of student learning. Research has shown that instructional materials can have a major impact on student outcomes,⁴ and they can also be transformation tools for equity.⁵

While there is wide agreement about alignment to state standards being a key foundation for instructional materials to be considered high-quality, we assert that the definition of truly HQIM goes beyond that. HQIM in mathematics: **(1) are aligned to state grade-level standards; (2) include supports for all students to access grade-level content; (3) include clear guidance to facilitate implementation; (4) are informed by culturally and linguistically sustaining pedagogy; and (5) include high-quality assessments of both content and language.** Below, we elaborate on several important research-informed components of each category of HQIM.

¹ As defined in California Department of Education's (CDE) "[Improving Education for Multilingual and English Learner Students](#)," the term "multilingual learner" (ML) refers to "students who have developed or are developing proficiency in both English and one or more other languages, which may be their home language. Students may be mostly dominant in one language or proficient in both" (CDE, 2020, p. 32). CDE also uses the term "English learner" (EL) to refer to students who are formally (by federal civil rights law) identified as having a home language other than English and levels of English language proficiency that indicate they need programs and services that will support them in becoming English proficient. They are a federally protected class of students with the right to specialized services that enable them to become fully proficient in English and achieve grade-level standards. We use "ML/EL students" to signal both subgroups of students.

² California Department of Education (Fall 2022). [Facts about English Learners in California](https://www.cde.ca.gov/ds/ad/cefelfacts.asp). <https://www.cde.ca.gov/ds/ad/cefelfacts.asp>

³ We use "ML/EL students" to signal both the broader, asset-based terminology of multilingual learners, and the specific formal designation of English Learner students that are included within the category of multilingual learners.

⁴ Chingos, M. and Russ Whitehurst, G. (2012). [Choosing Blindly: Instructional Materials, Teacher Effectiveness, and the Common Core](#). Brown Center on Education Policy at Brookings.

⁵ Hartl, S. and Riley, C. (March 2021). ["High-Quality Curriculum is a Transformation Tool for Equity."](#) ASCD.

Definition

1. Alignment to state grade-level standards

HQIM are aligned to grade-level state standards, and support the implementation guidance included in statewide instructional frameworks. They integrate mathematics, language, and literacy learning to support the work of the discipline. HQIM also align with the California English Language Development (ELD) standards⁶ in order to provide high-quality instruction for all learners. Where relevant, the materials make the mathematics instructional shifts⁷ explicit, such as adhering to the aspects of rigor, which include a balance among conceptual understanding, procedural skills and fluency, and application.

2. Supports for all students to access grade-level content

HQIM promote all students' access to grade-level mathematics through engaging, affirming, and meaningful instruction.⁸ For student groups that have been historically underserved, meaningful access to grade-level content through strategic supports, without modifying the intended aspect(s) of rigor called for by the grade-level standard, is critical. HQIM spiral concepts, skills, and language to give students consistent exposure and multiple opportunities to develop proficiency over time. Relatedly, HQIM include supports for any students not yet at grade level to access grade-level content, such as including intentional scaffolds to increase access to grade-level content.

There are several specific supports that HQIM should include to provide access to grade-level content that are beneficial for all students. These are especially important for culturally and linguistically diverse students, including ML/EL students and students who speak other varieties of English. These include:

- Appropriate support to participate in speaking, listening, reading, and writing activities, as they relate to processing and demonstrating understanding in math through the use of instructional routines and intentional communication protocols.
- Guidance for language development supports, through both designated and integrated ELD, as well as guidance for gradually decreasing the use of those supports as proficiency in language development increases.
- Language support resources in multiple languages that reflect the home languages of students and families,⁹ as well as guidance for all educators to support students in accessing their full linguistic repertoire¹⁰ with strategies such as translanguaging¹¹ in their classrooms.

⁶ California Department of Education (November 2012). "California English Language Development Standards: Kindergarten through Grade 12." English Learner Support Division. <https://www.cde.ca.gov/sp/el/er/documents/eldstndspublication14.pdf>

⁷ Student Achievement Partners. "College- and Career-Ready Shifts in Mathematics." Achieve the Core. [v5_https://achievethecore.org/page/900/college-and-career-ready-shifts-in-mathematics](https://achievethecore.org/page/900/college-and-career-ready-shifts-in-mathematics)

⁸ UnboundEd. (September 2021). "What is GLEAM?" <https://www.unbounded.org/blog/what-is-gleam>

⁹ Publishers should be cognizant of and responsive to their focal markets with the goal of broadening the offering of languages offered to extend access. At minimum, per the guidance in California Education Code Section 48985, materials should be offered in the languages where 15% or more of the student population speaks that language, with the goal of broadening access by increasing the number of products offered in the variety of languages that students speak.

¹⁰ "Linguistic repertoire" refers to the collection of linguistic resources that a person has accumulated over the course of their life and that they utilize and interpret in their interactions with other people (Blommaert and Backus 2011). Blommaert, Jan and Ad, Backus 2011. Repertoires revisited: 'Knowing language' in superdiversity. Working Papers in Urban Language & Literacies, Paper 67. Tilburg: Tilburg University.

¹¹ As defined in California Department of Education's (CDE) "[Improving Education for Multilingual and English Learner Students](#)," the term "translanguaging" refers to an instructional practice "where students are encouraged to use their full language repertoire, or all of their languages, in classroom learning" (CDE 2020, p. 86).

- Primary instructional materials in additional languages of instruction, both for dual-language immersion settings and in English-only settings to support access to mathematics materials for ML/EL students and their families.
- Guidance and supports for educators to anticipate and explicitly teach the language forms, functions and structures, including vocabulary, organization, and math syntax,¹² that students need to access rigorous math-specific tasks and mathematical discourse, such as through mathematical terms and definitions, labeled pictures or diagrams.

3. Clear guidance to facilitate implementation

HQIM include guidance for teachers that makes it clear what to prioritize and the pedagogical shifts¹³ that are required to implement the materials, such as by considering the depth and breadth of the materials or balancing lesson layout with instructional minutes and calendar. They are aligned to the instructional guidance described in the most recent California Mathematics Framework.¹⁴ HQIM include lesson plans and provide accessible accompanying educator resources to support effective planning, which includes instructional strategies to employ aligned to the aspects of rigor. HQIM also include differentiation for targeted student groups, intervention efforts, and formative assessment guidance (e.g., look-fors and scaffolding options). This includes professional learning supports and built-in guidance within the materials to support all students, including ML/EL students, to engage in grade-level learning. These materials should be adaptable to different delivery models and primary language(s) of instruction in dual-language immersion settings.

HQIM also include guidance for school leaders and districts that builds coherence across grades, departments, schools, and the district as a whole. This can include guidance for coordination and collaboration between content area teachers and student support teachers in service of supporting the content learning and language development of all students. HQIM are vertically and horizontally aligned to support learning within grades and across all grade level mathematics instruction and include clear pacing guides that support the focus and major work of each grade. In addition to teachers, all staff involved in implementation, including school and district leaders, paraeducators, and instructional aides, should receive professional learning opportunities and guidance to support implementation for all students.

4. Informed by culturally and linguistically sustaining¹⁵ pedagogy

HQIM are informed by and responsive to the research on culturally responsive teaching,¹⁶ culturally relevant pedagogy,¹⁷ and linguistically responsive teaching.¹⁸ In addition, HQIM include evidence-informed design features that respond to the specific learning needs and assets of culturally and linguistically diverse students. Following this research, HQIM emphasize a deep thinking model, inquiry-based learning,

¹² Moschkovich, J. (2012). "Mathematics, the Common Core, and Language: Recommendations for Mathematics Instruction for ELs Aligned with the Common Core." *Understanding Language*. Stanford University.

¹³ Student Achievement Partners. "College- and Career-Ready Shifts in Mathematics." Achieve the Core. <https://achievethecore.org/page/900/college-and-career-ready-shifts-in-mathematics>

¹⁴ 2023 California Mathematics Framework. California Department of Education. <https://www.cde.ca.gov/ci/ma/cf/>

¹⁵ California Department of Education (2023). "Culturally Sustaining Pedagogy." <https://www.cde.ca.gov/pd/ee/culturallysustainingped.asp>

¹⁶ Hammond, Z. L. (2015). *Culturally Responsive Teaching and the Brain*. Corwin Press.

¹⁷ Ladson-Billings, G. (1995). But That's Just Good Teaching! The Case for Culturally Relevant Pedagogy. *Theory Into Practice*, 34(3), 159–165. <http://www.jstor.org/stable/1476635>

¹⁸ Hollie, S. (2017). *Culturally and Linguistically Responsive Teaching and Learning*. Shell Education.

and rigorous tasks¹⁹ that attend to a balance of conceptual understanding, procedural fluency, and application. HQIM use affirming and asset-based language. They also offer students opportunities to both see themselves reflected (mirrors) and have opportunities to learn about and understand others' identities and experiences (windows),^{20, 21} and guide teachers to respond to the particular assets and needs of their diverse students.²²

HQIM are accessible and engaging for both students and families. To engage students, HQIM focus on grade-level work that builds students' curiosity and ties to their prior knowledge, backgrounds, and culture. HQIM support student engagement through active and well-facilitated, student-centered learning with direct and small-group instruction, as well as independent work time, when appropriate. HQIM also support family engagement through building home-school connections within the materials and uplifting family funds of knowledge as an asset, as well as through supplemental instructional materials and resources that explain the progression and focus of instruction in multiple languages, to reflect the home languages and cultures of students and families.

5. High-quality assessments of both content and language

HQIM include quality summative, interim, and formative assessments²³ of primary content learning and the language goals that support those content objectives. Materials include a formative assessment plan for language alongside content that includes a connection to established unit/lesson language goals. They embed formative and interim assessment systems, as well as use multiple types of formative assessments. Formative assessments develop and support student self-reflection, efficacy, and agency. Assessment guidance highlights what to look for in student work and how this will impact subsequent lessons, the skills, standards, concepts, and language they should be assessing, aligned to the appropriate aspect of rigor, and how to analyze and support math-specific language development. These assessments support making grade-level learning expectations clear, such as by describing, illustrating, or discussing quality student work.

HQIM include several assessment supports, which benefit all students, and specifically ML/EL students. In addition to making grade-level expectations clear, assessments include clear language targets related to the core mathematics content (such as the guidance detailed in the [California Mathematics Framework Chapter 12: Mathematics Assessment in the 21st Century](#)). Students are regularly assessed on both their content mastery and the use of mathematical language to negotiate meaning and communicate understanding. Assessment data should be used to provide timely, specific feedback to students to support their math and language learning. To the degree possible considering the diversity of languages spoken at home, materials incorporate the use of assessments in multiple languages in order to offer the opportunity for students to leverage their home languages.

¹⁹ Hammond, Z. L. (2015). *Culturally Responsive Teaching and the Brain*. Corwin Press.

²⁰ Style, E. (1988). "Curriculum As Window and Mirror." *Listening for All Voices*. National Seed Project.

²¹ Sims Bishop, R. (1990). "Mirrors, Windows, and Sliding Glass Doors." *Perspectives: Choosing and Using Books for the Classroom*. vol 6, no. 3. The Ohio State University.

²² While guidance around these practices should be included within HQIM, this also requires additional ongoing training for teachers outside of the instructional materials.

²³ California Department of Education (July 2014). "Chapter Eight of the English Language Arts / English Language Development Framework for California Public Schools Kindergarten through Grade Twelve." <https://www.cde.ca.gov/ci/r1/cf/documents/elaeldfwchapter8.pdf>

Recommended Resources

Alignment to state grade-level standards

Achieve and Educators Evaluating Quality Instructional Products (EQulP): [Rubric for Lessons & Units: Mathematics](#)

EdReports: [Instructional Materials Review Reports](#)

Student Achievement Partners: [Instructional Materials & Assessment Rubrics: Instructional Materials Evaluation Tool \(IMET\) - Peers and Pedagogy](#)

Supports for all students to access grade-level content

California Curriculum Collaborative: [Criteria for Review of Instructional Materials' Success in Addressing Multilingual Learners' Linguistic and Instructional Needs](#)

Center for Equity for English Learners: [Ensuring Equity and Excellence for English Learners: An Annotated Bibliography for Research, Policy, and Practice](#)

English Learners Success Forum: [Guidelines for Improving Math Materials for English Learners](#)

Clear guidance to facilitate implementation

Center for American Progress: [Successful Implementation of High-Quality Instructional Materials](#)

CORE Learning: [6 Conditions for Success in High-Quality Instructional Materials Implementation](#)

CORE Learning: [An Evidence-Based Approach to Building Leadership Capacity in Curriculum Implementation](#)

National Implementation Research Network: [District Capacity Assessment](#)

San Francisco Unified School District's Multilingual Pathways Department: [Discourse Routines & Protocols for Structured Talk & Interactions](#)

Strategic Education Research Partnership: [The Internal Coherence Assessment protocol & Development Framework](#)

Informed by culturally and linguistically sustaining pedagogy

The Education Trust-West: [A Pathway to Equitable Math Instruction](#)

NYU Metro Center: [Culturally Responsive Curriculum Scorecards](#)

UnboundEd: [Equitable Math Instruction: Enacting Instruction that is Grade-Level, Engaging, Affirming, and Meaningful](#)

UnboundEd: [GLEAM™ Framework](#)

High-quality assessments of both content and language

English Learners Success Forum: [Designing for Formative Assessment: A Key to Improving Learning for Multilingual Learners](#)

[Formative Assessment of Mathematics and Language](#)

WestEd: [Formative Assessment: Focus on a Frequently Misunderstood Domain](#)