

Strategy	Description and rationale
*Adapt anchoring phenomena to be local, meaningful, and accessible	Adapt a lesson or unit’s anchoring phenomena to your local context, keeping in mind students’ home cultures and languages. <i>This can help make the phenomena more accessible for your multilingual students, which in turn can support their sensemaking.</i>  (Dong 2009; MacDonald, Miller, and Lord 2017)
Intentionally group students to support English language use and development	Depending on the goals of a lesson, intentionally group multilingual students with certain peers (sometimes with peers who know the same languages as them, and other times with peers whose English language development is slightly more advanced). <i>Thoughtful grouping that varies throughout a unit allows multilingual students to benefit from working with different peers and learn from the uses of other students’ linguistic resources.</i>  (González-Howard et al., 2017; NASEM 2018)
*Provide students with opportunities to talk in small groups before whole class discussions	Before students engage in whole class discussions, let them first talk with others in pairs or small groups about their ideas. <i>Smaller group structures offer multilingual students a chance to engage in sensemaking with their peers, and also offer them the space to use their linguistic and nonlinguistic resources to express their ideas (and learn from other students’ uses of these resources too).</i>  (González-Howard et al., 2017; Grapin 2019; MacDonald, Miller, and Lord 2017; NASEM 2018)
*Encourage students to use linguistic and non-linguistic modes to express their ideas	During moments when students are tasked with expressing their ideas, allow them to do so through linguistic (oral and written language) and nonlinguistic modes (e.g., drawings, graphs, symbols, gestures). <i>Making connections between written or spoken words and non-linguistic representations helps multilingual students generate richer understandings of scientific phenomena.</i>  (Grapin 2019; NASEM 2018)
*Allow students to use both content-specific and everyday registers to express their ideas	When communicating ideas, encourage students to use both content-specific and everyday registers. This helps students fully express themselves, allowing peers to evaluate, question and build off their ideas. <i>Switching back and forth between different registers is especially important for multilingual students because it helps them draw on their full range of meaning-making resources.</i>  (NASEM 2018)

<p>Highlight cognates in science</p>	<p>When applicable, call attention to cognates. Cognates are words that are similar in both spelling and meaning across languages. Many science vocabulary words have cognates (e.g., photosynthesis in English = fotosíntesis in Spanish). <i>Highlighting cognates can support multilingual students in making connections between their home language(s) and new science vocabulary in English, vocabulary they may then use to do sensemaking work.</i></p> <p>(Dong 2009)</p>
<p>Use multiple types of representations to develop students' understanding of new vocabulary</p>	<p>When students learn new vocabulary, have them represent the new term in multiple ways. Students can 1) write the term, 2) draw a representation of the term, 3) use their own words to write an explanation for what the term means, and 4) use the new term in a sentence. <i>Doing so helps multilingual students form a deeper understanding of new vocabulary related to the focal science topic.</i></p> <p>(Marzano and Pickering 2005)</p>
<p>*Explicitly address how language is used for scientific sensemaking</p>	<p>Spend time discussing with students how language is used to engage in scientific sensemaking (e.g., to construct questions, or make claims that are supported by evidence). This can be done in many ways, such as having students analyze an exemplar text to identify what about its language makes it strong, or brainstorming as a class different ways to express ideas around a topic using linguistic and non-linguistic modes of communication. <i>This transparency will allow multilingual students to more deeply understand how language can be used to partake in science and engineering practices.</i></p> <p>(González-Howard et al., 2017; NASEM 2018; O'Hallaron, Palincsar, and Schleppegrell 2015; Symons 2017)</p>
<p>Unpack the meaning of certain words in the context of science</p>	<p>Break down the meaning of scientific words that are central to a lesson, especially if these words have different meanings in different contexts (i.e., in science versus everyday use). <i>This provides multilingual students the chance and space in which to discuss any preconceptions about the meaning of the word(s), and to draw upon their personal experiences.</i></p> <p>(NASEM 2018; O'Hallaron, Palincsar, and Schleppegrell 2015)</p>
<p>Purposefully use sentence starters to scaffold productive language</p>	<p>When necessary, use sentence starters to model particular oral or written language production skills, like forming scientific questions, explanations, or engaging in argument from evidence. It is important that such scaffolds be used purposefully and removed when no longer needed. <i>Sentence starters help multilingual students develop English language skills all the while expressing their ideas to peers.</i></p>

	(González-Howard et al., 2017; Rodríguez-Mojica 2019)
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