

Leveraging Assets of Multilingual Learners



Knowles Fellows are high school math and science teachers across the U.S. who teach in unique contexts, which include teaching learners whose first language is not English. We recognize multilingual learners are not a homogenous group and may not have the same needs. In the same classroom, a Fellow may have students with a range of English proficiency and many different first languages. Some are newcomer students and others have been in U.S. schools for several years. No matter the differences, Fellows are tasked with introducing the language of math and science to all students to support them in engaging in rich and meaningful ways, which adds another layer to the work of teachers and learners.

We invited Fellows to share their wealth of knowledge and experiences on supporting multilingual learners in doing math and science. Ben, Tess, Rachel, Casey and Albert David shared some of the ways they contributed to positive learning outcomes for their multilingual learners by leveraging language as an asset for learning, reducing barriers to participation due to language, and increasing opportunities to work in collaborative groups. The Fellows' successes with their students challenge the deficit perspectives of multilingual learners and use of their first language in math and science classrooms. Ben highlights the challenges of teaching multilingual students math and science content in the face

of deficit perspectives that exist. He stated, “There’s also a lot of work teachers do to combat harmful narratives—that English-only instruction is the best method or that focusing on language takes away from content/rigor, especially in math/science settings—about language learners.”

Our Fellows, and countless other teachers, strive to “combat harmful narratives” while providing learning environments that leverage students as assets for their own learning, including their first language. In the following paragraphs, we demonstrate how our Fellows are working in their classrooms to elevate the status of multilingual learners and leveraging the assets students already possess.

Multiple Ways to Share Ideas

For multilingual learners, sharing their ideas can be challenging if they are only allowed to share through verbal or written means. When a teacher can expand the ways in which learners can share ideas, language is no longer a barrier to participation and learning. For example, Tess invited her students to share ideas using visual tools. Tess stated, “[Modeling] allows for students to express their understanding of science in drawing or through a diagram rather than strictly through written or verbal expression.”

We see from Tess’s experience that by sharing visuals (and other strategies where language is not a hindrance), her students become centered in the learning and are able to take risks without the negative implications often associated with language. Tess added:

I have seen multilingual learners perform spectacularly in my class. They are able to express their understanding of the science [content] in various ways, including drawings, models, diagrams, and in words. They engage collaboratively with their peers even when they are not sure of the right words to use. Just like I hope for all my students, they learn that making mistakes is part of learning and begin to feel empowered to try new and difficult concepts without consequence.

Language as an Asset for Learning

Returning to Ben’s point on pushing back against the exclusion of multilingual learners’ first language, our Fellows showed how leaning into language as an asset can support learning outcomes. Rachel indicated that the strategy of “using

knowledge of home language to connect to cognates” has benefited her students. Ben provided an example of how he drew upon cognates to help students connect math and science language to students’ first language—“Connecting between languages with cognates or orienting to the meaning of words i.e., “percent → cent means 100, decimal → deci means 10.”

By using strategies that support and connect a student’s first language to math and science language, our Fellows have observed students making strides with using the language of the content area and sharing their ideas. Rachel stated, “Even when my multilingual learners are speaking in other languages in class, during labs for example, I have found them incorporating more translanguageing and using science vocabulary in English.”

Ben named multiple benefits of supporting use of multilingual learners’ first languages. He shared, “Students incorporate more key vocabulary in oral and written explanations, better content retention and learning, [and] students [are] more comfortable sharing ideas and participating in class.”

Structuring Collaborative Student Work

In the intentional practice of planning for instruction, our Fellows named how they are strategic in supporting multilingual learners to work in student-centered groups. Casey often arranged her students in mixed groups based on their language proficiency and shared with us:

We work in heterogeneous groups as well, depending on the activity, and I encourage students to explain or share in their native language when a peer needs help understanding if they feel comfortable or want to help in that way.

In heterogeneous groups, when students help each other the benefit is mutual to *both* students. For example, a student that is further in their English language proficiency is able to support their peers in their first language. That student can also enhance and practice their ability to connect English to their first languages. Casey also extended on the idea of connection by inviting students to use their knowledge of language to ultimately increase confidence as content learners. She explained:

Not every student comes into my class with the same science background knowledge. Some students have taken a lot of science classes and have solid prior

background knowledge. Other students don't have as much 'formal' science knowledge, so finding ways for students to make connections to the knowledge they do have, and boosting their confidence in a science class is vital to them feeling comfortable taking risks. Some students express to me that they feel 'stupid' or 'dumb' in English, and get frustrated with the additional new information, and complex vocabulary, of biology. Having students feel comfortable and building community in the classroom, as well as modeling, making mistakes and learning from students, are important so students know that we are all learning together.

Albert David implemented a peer review activity by providing group work structures with assigned roles and a rubric to convey clear expectations. By assigning roles, all members of the group are accountable for supporting each other and providing a safe environment to practice their speaking and reading. Albert David described how he sets up the group peer review activity:

Students choosing roles between reader, writer, and presenter. Students are given samples of their own work or work at their academic and reading/writing level. They discuss in groups how to grade the samples, which are usually from activities they already completed. They write their reasoning and present it to the class. They then switch roles for another set sample. Rubrics are provided for each sample question and response.

Albert David explained the benefits of using this structured approach to support his multilingual learners:

All learners get practice reading each other's samples aloud. Even the most quiet students then get practice speaking or reading aloud at some point. They get to see others doing the same and listen to classmates discuss grading ideas. Some multilingual learners prefer to stay in the reader or writer roles, which is great practice in itself. Some challenge themselves and take on the presenter role, getting to speak to the entire class, summarizing the group's ideas. Every time I've done these activities, there are always positive results, because not only are they getting to practice their ELA skills, they are also discussing the science behind the sample responses and rubrics to come to a decision about the grading ideas their group makes. I deliberately put in samples that may have mistakes, and even the multilingual learners realize those mistakes are there, showing that they do understand the science going on.

Takeaways

In our work, we ask Fellows to engage their learners as doers of a discipline. To us, this means that our teachers plan instruction for student-centered learning that allows for the learners to be active authors of their ideas. Students are provided a high cognitive demand task in collaborative groups and use disciplinary practices to generate knowledge of key concepts. Learners use talk as a way to share and listen to ideas and provide supporting evidence. Through this process, the teacher is orchestrating learning opportunities that lead to deep content knowledge. Furthermore, we firmly believe that equitable teaching practices include increasing the participation of all learners as doers of a discipline.

Teaching is a complex endeavor, as highlighted by Ben in the opening passage. Working with multilingual learners requires teachers that can support students to navigate the challenges of moving toward equitable learning outcomes that include deep understanding of math and science content, while attending to language and cultural differences. Teachers are simultaneously having to dispel deficit narratives and incomplete ideas about best practices for teaching multilingual learners. This is situated within larger structures, such as school district-level guidance, and support for teachers, including professional development opportunities focused on instruction for multilingual learners.

There are three key takeaways from the knowledge and experiences of our Fellows who work with multilingual learners.

1. Increasing doing in the discipline—Fellows employed different strategies to engage multilingual learners as doers of math and science. When students are asked to use models, diagrams or drawings, language does not stop them from sharing their ideas.
2. Elevating status—Fellows leveraged students' first languages, ways to share ideas and provided group work structures that elevated their status. Being able to participate in group and whole class situations and having their contributions recognized can provide a supportive environment for continued

learning.

3. Equitable teaching – The use of various strategies by the Fellows increased the doing of math and science by their students. This in turn, led to positive outcomes, including increasing student learning and their confidence in doing math and science.

While we started by cautioning against casting a big multilingual learner umbrella over the entire group, we are grounded in the belief that all students are driven to succeed. Students often show great awareness of their needs and goals. Albert David shared, “Multilingual learners have said and written specifically that they need help with connecting ideas together and writing reasoning statements that involve physics theories and laws. They want to and recognize their need to get better at academic writing and reasoning.” Students are also very attuned to their context as Tess added, “My multilingual students most frequently voice to me the need for patience with them. They worry, perhaps from past experiences in school, that their language skills will exclude them from the learning environment or leave them behind.”

By taking in the complexities faced by teachers and multilingual learners, we ask how can educators identify the assets students bring and leverage them for deep content learning?