

Developing Scientific Language

Some instructional approaches emphasize the role of introducing key vocabulary before learning about the concepts they are connected to in a lesson. That is *not* an approach we support in OpenSciEd units. While we agree that developing scientific terminology is one important goal for students, it should not undermine the heavy lifting we want students to engage in intellectually. In each lesson we want students engaging in practices around a question that they feel a genuine need or drive to figure out. Front-loading vocabulary hinders this process and also puts up barriers on emergent multilingual students to engage in class discussions.

Students can communicate about and grapple with phenomena without using scientific terms. Once ALL students have developed a conceptual understanding of an idea in a lesson, introducing a relevant scientific term as a shorthand way to reference that idea makes complete sense. It is simply a matter of timing and where we want them focusing their intellectual work.

Here is an example: In a unit on sound, students notice that the graph of the vibrations produced by an object exhibits two interesting characteristics. A few rounds of trying to describe patterns (first individually, then with a partner, and finally as a whole group) leads students to start talking about two features of these patterns that can be compared and measured. One feature can be described in terms of the distance from the y-value of a high point on the graph. The other can be described in terms how often that pattern repeats. It is at this point, after the class has worked with these ideas for a bit and wrestled with what words best describe each feature, that the teacher can point out that it seems cumbersome to keep referring to these features to describe the graphs, and that two terms are used to refer to these features. One is *amplitude* and one is *frequency*. At this point, it makes sense to consolidate students' ideas by showing how these two terms correspond to the patterns they observed and were describing. From this point on, using these terms to represent these features of such graphs is meaningful and appropriate.

This approach to vocabulary building doesn't undermine the sensemaking of students, nor defeat the goal of figuring out important science ideas in each lesson. We want to give students a rich opportunity and experience to wrestle with developing these important science ideas before introducing vocabulary to represent an abbreviated description of those ideas.

As new scientific terminology is developed with the class, we recommend that you build a word wall (example shown above) of these ideas. Keeping a visual model, or examples if applicable, next to each word can help students recall the concept the word is associated with.

