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Teaching physics sense-making to physics majors[1]

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A physicist's job is to make sense of the universe. Therefore, sense making ought to be at the heart of how we train physics students. As instructors, we are delighted - even thrilled - when students demonstrate their ability to use physics concepts to make explanations or interpret mathematical expressions physically. However, although we physicists value this sense making, our instruction fails to feature it. Too often, our reasoning is not made visible to students, and even when it is, students view sense making as something that physicists do but that students need not do. Our team has been working on how to incorporate explicit instruction about physics sense making into a sophomore-level mechanics course. I will discuss what we have learned about student sense making and how to encourage a sense-making habit. This discussion draws from analysis of interviews, written homework and exam problems, and a pre/post assessment that is in development.

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