

Abstract Submitted  
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**How do students explain their reasoning?**<sup>1</sup> ANNE ALESANDRINI, PAULA HERON, University of Washington — In addition to getting correct answers, we as instructors want our students to be able to use—and communicate—correct and complete reasoning. Here, we examine written explanations from students in introductory university physics courses to illustrate the breadth of the responses given when students are prompted to explain their reasoning. We analyze these explanations in terms of types, forms, and features, paying attention to what is present beyond what might score points on an instructor's rubric. Rather than focusing on context-specific reasoning difficulties, we examine the commonalities across multiple physics content contexts in what, to students, may constitute satisfying explanations. This broad view of student explanations has the potential to guide instruction aimed at the development of student explanation skills in ways that leverage and are responsive to how students currently explain their reasoning.

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