

**PST2A-20: 9:45–10:30 p.m. Student Ideas
Regarding Entropy***

David E. Meltzer, College of Teacher Education and Leadership, Arizona State University, Mesa, AZ 85212; david.meltzer@asu.edu

Warren M. Christensen, North Dakota State University

Craig A. Ogilvie, Iowa State University

We have probed student ideas regarding entropy and the second law of thermodynamics in several introductory physics courses enrolling more than 1000 students during a three-year period. We found distinct patterns of student thinking before instruction, including a strong tendency to apply conservation reasoning inappropriately as well as confusion regarding the meaning of “system” and “surroundings.” We found little change in these patterns after instruction. However, targeted instruction using research-based tutorials showed promise of improving student understanding of these and related concepts.

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