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Quality of Undergraduate Physics Students' Written Scientific Arguments: How to Promote Students' Appropriation of Scientific Discourse in Physics Laboratory Reports? MEHMET AYDENIZ, KUBRA YETER-AYDENIZ, The University of Tennessee, Knoxville — In this study we challenged 18 undergraduate physics students to develop four written scientific arguments across four physics labs: 1) gravity-driven acceleration, 2) conservation of mechanical energy, 3) conservation of linear momentum and 4) boyle's law, in a mechanics and thermodynamics laboratory course. We evaluated quality of the written scientific arguments developed by the participants using the Claim, Evidence, Reasoning and Rebuttal (CERR) rubric. The results indicate that while students developed adequate scientific explanations that summarized the findings of their experiments, they experienced unique difficulties in using a persuasive and critical discourse in their written arguments. Students experienced the most difficulty in considering alternative explanations in formulating their written scientific arguments. We elaborate on the implications of these findings for teaching physics laboratories and assessing students' learning in physics laboratories. We especially focus on the importance of framing in helping students to appropriate the epistemic norms of science in writing scientific arguments.

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