

Abstract Submitted
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**Promoting Metacognition in Introductory
Calculus-based Physics Labs**¹ DREW GRENNELL, ANDREW BOUDREAUX,
Western Washington University — In the Western Washington University physics
department, a project is underway to develop research-based laboratory curricu-
lum for the introductory calculus-based course. Instructional goals not only include
supporting students' conceptual understanding and reasoning ability, but also pro-
viding students with opportunities to engage in metacognition. For the latter, our
approach has been to scaffold reflective thinking with guided questions. Specific
instructional strategies include analysis of alternate reasoning presented in fictitious
dialogues and comparison of students' initial ideas with their lab group's final, con-
sensus understanding. Assessment of student metacognition includes pre- and post-
course data from selected questions on the CLASS survey, analysis of written lab
worksheets, and student opinion surveys. CLASS results are similar to a traditional
physics course and analysis of lab sheets show that students struggle to engage in
a metacognitive process. Future directions include video studies, as well as use of
additional written assessments adapted from educational psychology.

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Drew Grennell
Western Washington University

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