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Sustaining educational transformations: evidence and approaches at CU Boulder[1]

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Research in educational innovations provides mechanisms to systematically improve education in large introductory physics classes. But what is involved in adopting, and than adapting, research-based transformations to suit local constraints? How do we assess the impact of the curricula, how do we promote and sustain changes across time, with a broad variety of faculty? We report here on local efforts to implement two well-studied PER-based innovations: Peer Instruction [1] and Washington Tutorials [2]. Our course transformations are facilitated through our local model of undergraduate Learning Assistants, promoting reforms while recruiting and supporting future K-12 teachers. We document the impacts from multiple terms, instructors, and courses, including sustained learning gains that exceed twice the national average for traditional courses. A guiding theme of our studies is to investigate the sustainability and impacts of our efforts.

[1] Mazur, E., "Peer Instruction," Prentice Hall 1997
[2] McDermott, L., Shaffer, P. and the PEG, "Tutorials in Introductory Physics," Prentice Hall 2002

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