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Reforming Intro Physics Labs to Focus on Innovation, Creativity, and Scientific Skills

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Approaching a question without fear; coming up with an idea; designing an experiment; understanding assumptions; interpreting data; reasoning from evidence. Many physicists would claim they do this for a living, and most would be delighted to observe this behavior in their students, yet for a variety of reasons this is often not what we encourage in our introductory physics labs.

We have developed a portable wireless lab system with the goal of putting simple yet powerful tools in the hands of every student, and we are currently implementing a new design-based approach to our introductory physics labs based on this tool. Our students invent experiments and acquire data both in and out of the classroom, and share their data with each other and with instructors using an integrated cloud based repository. This new approach is allowing us to shift the focus of our introductory physics labs toward creativity, critical thinking, and communication.

Author: Dr SELEN, Mats (University of Illinois)

Presenter: Dr SELEN, Mats (University of Illinois)

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