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Teaching through Simple Experiments

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Our main goal in this proposed talk is to start a discussion among faculty around the power of simple in-class experiments to teach fundamental fluid mechanics. Many introductory fluid mechanics classes are highly theoretical and mathematical, with students becoming experts in applying mathematical recipes without truly understanding the underlying concepts and assumptions. Often, these fundamental concepts can be taught through asking the students to design and execute experiments, but this can take substantial class time. Our long term goal is to develop a library of short and cheap (2-5 min and under $1) experiments that all students can execute in class. These experiments promote discussion between the students and through that, a better fundamental grasp of the material. In this talk, we will show a number of experimental videos that we are developing for the Gallery of Experiments at eFluids.com. We will present both common experiments and those in areas students usually do not experience in an introductory course: low Reynolds number and non-Newtonian fluids. We will end with a discussion with the audience to look for new ideas and potential experiments. In collaboration with Gareth McKinley, Massachusetts Institute of Technology.