Abstract Submitted
for the NEF15 Meeting of
The American Physical Society

Teaching Physics using low-tech experiments in the lecture room

[1] HASHINI MOHOTTALA, University of Hartford — Here we report low-tech lab centered physics teaching in introductory level, calculus and algebra based physics courses. Lab-centered physics teaching is relatively under- explored. Our low-tech lab based classroom environments are well-equipped for hands-on learning activities. Laboratories are essential components in every intro-level physics course. But day by day the labs are moving toward high-tech, leaving less hands-on access to experiments. Students who live in virtual worlds are able to complete the high-tech labs in no time, but do not necessarily connect with them. For the most part, they don't find the relevance of the physics concepts they learned in the lecture and relate to the labs. We use less expensive raw materials to come up with experiments to help our students understand relatively confusing physics principals. We assign our weekly quiz problems requiring students to design simple experiments to solve them. In some cases, they collect the data to do the calculations, and other cases use the given information to do the calculations, later setup the experiment, and find result and do error analysis. Quiz sessions are limited only for 30 min. Students are working in groups. Each member in the group has a role and it changes in weekly basis. Beyond technical abilities, low-tech and reformed laboratory based lectures often emphasize teamwork, oral and written communication skills. We observed a substantial improvement in test averages.

[1]Teaching Physics using low-tech experiments in the lecture room

Hashini Mohottala
University of Hartford

Date submitted: 15 Oct 2015 Electronic form version 1.4