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Generating Ideas for Active and Experiential Learning in Physics

Tuesday, 16 June 2015 10:15 (30 minutes)

The Physics community has known the importance of Active Learning (AL) for the last twenty years (see [1,2]). A recent analysis of 225 studies on AL [3] has demonstrated that "active learning appears effective across all class sizes — although the greatest effects are in small (n <= 50) classes."Physicists have innovated both technologies and techniques for AL [4,5]. Yet, most classes, particularly in institutions where research is conducted, are primarily delivered via lectures. Many research-active faculty members do not feel like they have the time or incentive to explore AL methodologies. At the University of Windsor, we have started a Faculty Network called "Promoters of Experiential, Active, and Research-based Learning"[6] to support our teacher-researcher colleagues in the Faculty of Science. Inspired by the activities of this network, in this session, I will lead a discussion on how very busy, teacher-researchers can adopt proven Active Learning strategies in their own classes.

[1] Richard Hake, "Interactive-engagement vs. traditional methods: A six-thousand-student survey of mechanics test data for introductory physics courses"American Journal of Physics, v. 66, pp. 64-74 (1998).

[2] Deslauriers, L., E. Schelew, and C. Wieman, "Improved Learning in a Large-Enrollment Physics Class" Science, v. 332, pp. 862-864 (2011).

[3] Scott Freeman et al., "Active learning increases student performance in science, engineering, and mathematics"PNAS, v.111, pp. 8410–8415 (2014).

[4] David E. Meltzer and Ronald K. Thornton, "Resource Letter ALIP–1: Active-Learning Instruction in Physics" Am. J. Phys. v. 80, pp. 478 -496 (2012).

[5] Multimedia Educational Resource for Learning and Online Teaching, http://www.merlot.org, © 1997–2015 MERLOT. Retrieved May 2, 2015.

[6] P.E.A.R.L. @ UWindsor, www.uwindsor.ca/pearl.

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