



Canadian Association
of Physicists

Association canadienne
des physiciens et physiciennes

Contribution ID: 2384

Type: **Invited Speaker / Conférencier(ère) invité(e)**

To Flip or not to Flip: Video Experiments in Physics Teacher Education

Thursday, June 6, 2019 11:15 AM (30 minutes)

Secondary physics teachers in British Columbia are faced with increasing demands of the new science curriculum, which in addition to the traditional content knowledge and skills emphasizes big science ideas, core skills and competencies, and science communication. At the same time, modern schools want teachers to be skilled in creative use of technology in order to engage 21st century students. Using technology to encourage students to become active physics learners is one of the biggest challenges of modern secondary science teachers. Science experiments are essential for helping physics teachers achieve this goal in their face-to-face or virtual classrooms. Thus, future physics teachers have to be prepared to use technology to teach physics in a captivating and interactive way. This is what my research team at the University of British Columbia is trying to achieve in our physics methods courses. In this presentation, I will demonstrate how my research team has incorporated modern video technologies in science methods courses in order to support future physics teachers in conducting effective and simple science demonstrations and experiments in their classes. In addition, we use this technology to prepare future teachers to teaching in a flipped classroom or even virtual learning environments. By learning how to design educational physics videos depicting these demonstrations future teachers improve their knowledge of physics and physics pedagogy, while learning about new technology. So while the answer to the “To flip or not to flip?” question depends on many factors, future teachers should be prepared to engage modern students using all available everyday life tools, including video technology.

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Session Classification: R1-4 Molecular sciences: outreach, teaching and research (DPE/DAMOPC) | Sciences moléculaires: rayonnement, enseignement et recherche (DEP/DPAMPC)

Track Classification: Physics Education / Enseignement de la physique (DPE-DEP)