

Engineering Education Innovation Center Seminar

Making Education Sticky: Approaches to the Repair of Undergraduates' Misconceptions About Thermodynamics and Heat Transfer

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Students enter our classrooms with a variety of ideas about how the world works, not all of which are accurate. Even for concepts such as the Second Law of thermodynamics, where one might expect that students have no pre-course experiences that might lead to misunderstandings, we find that many undergraduate students begin their courses with incorrect conceptual ideas. More disturbingly, a semester of typical instruction may move students' conceptual understanding little, even if they demonstrate ability to correctly manipulate relevant equations. This talk will discuss the evidence for student learning in a variety of different environments and how our work demonstrates that inquiry-based activities can be a useful approach for improving conceptual learning. By using these approaches we can double the learning gains seen in lecture-only courses. I'll also discuss my current work adapting those activities to be more faculty-friendly, and ongoing projects considering student-generated video and games as learning tools.

Thursday, February 13, 2014
9:30 am

Hitchcock Hall, Room 244G

If possible, bring a tablet/smart phone/laptop with you.