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Thinking In Physics

Two Physics Professors Awarded a $90K Grant for New Teaching Methods

LOS ANGELES, Sept. 7, 2007 —Vincent Coletta and Jeff Phillips of LMU's Frank R. Seaver College of Science and Engineering were awarded a grant of $90,017 to fund their latest project, Thinking in Physics. Their grant was awarded by the National Science Foundation (NSF) for their new endeavor which will carry through to 2009.

"We were delighted to hear that the NSF recognizes the importance of our Thinking in Physics (TIP) project," said Coletta. "We are aiming to change the way students think, and thereby improve their prospects for success in science and engineering. We have been successful in our pilot program. Now we will be able to help many more students."

Rising Above the Gathering Storm, a study commissioned by the National Academies of Science, recently identified the critical importance of increasing the number of graduates in science, technology, engineering, and mathematics (STEM) in the United States. Half of those who enter college as STEM majors end up switching to other disciplines. In an effort to make their courses more engaging, STEM instructors often create inquiry-based activities. Yet even in such interactive classes, students with limited reasoning skills and unfavorable attitudes and beliefs about learning are unable to thrive, as demonstrated by the research of Coletta and Phillips. Thinking in Physics aims to provide additional help for these students, improving their reasoning skills and their views about learning, providing the foundation for successful careers in STEM.

Birute Vileisis, director of sponsored projects at LMU, works closely with faculty to facilitate their search for funding. She believes the key reason for receiving the grant is because it is a very well thought-out concept.

Professors Coletta and Phillips have extensive knowledge of cognitive development, how to assess it, and its connection to conceptual understanding in physics. "Once we had clearly identified the problem, we sought a solution," said Phillips. "The result is TIP, which was inspired by the work of other scientists who have worked on cognitive development, especially Philip Adey in Great Britain, developer of a cognitive acceleration program for middle school children. Professor Adey is one of two distinguished external consultants for this project. The other is Professor Edward Redish, a leader in physics education research. In this project we are creating original research-based pedagogy and assessment aimed at helping make careers in science and engineering possible for many students, including members of underrepresented groups, who might otherwise find college-level science courses impossible."

About Loyola Marymount University

Located between the Pacific Ocean and downtown Los Angeles, Loyola Marymount University is a Catholic University offering a wide variety of undergraduate and graduate degrees. Founded in 1911, LMU is the largest Catholic university in Southern California with nearly 5,500 undergraduate students and more than 3,000 graduate and law students. Students can choose from more than 80 majors and programs in four colleges. The university emphasizes the Jesuit and Marymount educational traditions: education of the whole person – mind, body and spirit – as well as the values of ethics and social justice.

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