# *Visualizing Mechanics: Improving Student Learning through Video Demonstrations*

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The Purdue Mechanics Freeform Classroom (PMFC) is a project that seeks to reform engineering mechanics education by integrating content and technology; enhancing communication between students, their peers, and instructors; accommodating a broader range of learning styles; and facilitating greater depths of understanding. In an attempt to increase the PMFC's efficacy, a series of demonstration videos has been produced. As demonstrated by the popularity and pervasiveness of websites such as YouTube, short videos have the potential to captivate audiences. As such, these videos have incredible promise in educational contexts. In the PMFC series of videos, entitled Visualizing Mechanics, each imitates the length and format of a generic YouTube video, but is specifically designed to highlight and elucidate interesting phenomena in engineering mechanics. Various techniques are used in the course of video production, including student voiceovers, equation overlays, and advanced video enhancement techniques designed to improve student visualization. The result is videos capable of conveying key mechanics concepts that could not easily be recreated in a classroom setting. To date, the videos have been produced for only one class, ME 274: Basic Mechanics II at Purdue University, which provides an overview of particle and rigid body kinematics and kinetics, as well as an introduction to mechanical vibrations. Once this initial batch of videos is finalized, student surveys and YouTube Analytics tools will be used to assess their effectiveness. If the results of this assessment prove positive, the approach will be expanded to incorporate additional course content and allow for distribution to other colleges and universities outside the Purdue University College of Engineering.