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Visualizing Mechanics: *Educational Videos Demonstrating Core Mechanics Concepts*

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ABSTRACT

There has been an increased interest in using technology to relay information over the past 20 years. This interest has been reflected in the way the internet has expanded to incorporate nearly-uncountable numbers of blogs, streaming videos, and discussion forums. Recent research has shown that younger generations of students prefer internet-based platforms such as these to communicate and learn, as they are congruent with a visual style of learning. The present study seeks to fuse the predominantly reflective and intuitive methods found in a traditional lecture with the more visual and active modes of learning to provide a larger range of learning opportunities. Specifically, the authors seek to create educational videos in the technical area of mechanics that are appealing to students, and useful in their studies. These videos encompass experimental activities and mathematical analyses associated with core mechanics topics. The videos provide necessary background information and a brief overview of the experiment, and then proceed with a demonstration and subsequent analysis. This format allows the students to fully grasp the topic of interest, and in many cases ties it to a real-life example. The authors believe that ultimately these videos will enhance student understanding by appealing to a variety of learning styles, and ultimately have a marked impact on pertinent student success metrics.

KEYWORDS

Teaching, Education, YouTube

REFERENCES

- Rhoads, J., Nauman, E, B. Holloway, and C. M. Krousgrill (2014), *The Purdue Mechanics Freeform Classroom: A new approach to engineering mechanics education*, In the Proceedings of the 2014 AEEE Annual Conference.
- Snelson, C. and P. Elison-Bowers (2009), *Using YouTube videos to engage the affective domain in E-Learning*, in the Proceedings of the Research, Reflections and Innovations in Integrating ICT in Education, A. Mendez-Vilas, A. Solano Martin, J.A. Mesa Gonzalez, and J. Mesa Gonzalez, Editors. FORMATEX: Badajoz, Spain. p. 1481-1485.
- Duffy, P. (2008). *Engaging the YouTube Google-eyed generation: strategies for using Web 2.0 in teaching and learning*. *The Electronic Journal of e-Learning*, 6(2), 119-130.
- Felder, R., & Brent, R. (2005). *Understanding student differences*. *Journal of Engineering Education*, 94(1), 59-72.
- Moll, R., & Milner-Bolotin, M. (2009). *The effect of interactive lecture experiments on student academic achievement and attitudes towards physics*. *Canadian Journal of Physics*, 87(8), 917-924.