



# St. John's University Increases Student Engagement with JoVE Core: Biology



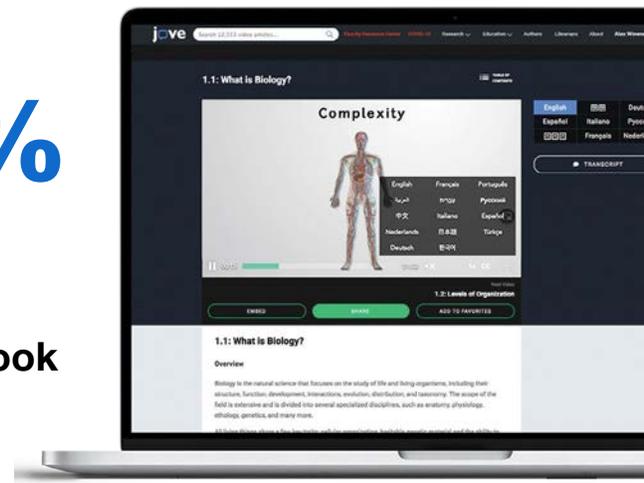
Spring semester 2019, Dr. Jiyun Kim of St. John's University began using JoVE Core: Biology in her undergraduate Introduction to Anatomy & Physiology course. 147 pre-health career students among two sections were given access to the video textbook as a supplement to their traditional textbook. 84.9% of students utilized their JoVE Core access and Dr. Kim reported significant increases in student engagement and learning outcomes.

## JoVE Core: Biology

A video textbook that brings key concepts to life through high-impact animations and scientist-in-action videos of experiments being conducted in laboratory settings. Covering topics in various branches of biology, from genetics to ecology and beyond, and featuring 9 voice-over translations (English, Chinese, Dutch, French, German, Italian, Korean, Russian and Spanish), JoVE Core: Biology can serve as an effective primary or supplementary teaching resource.

# 85.3%

of students find  
JoVE Core more  
attractive than a  
traditional textbook



“People in my generation prefer using technology for school because that is what we were born into and helps keep us interested in the subject”



“Using a textbook that is interactive is helpful and much more efficient for me. Watching the videos keeps me involved and engaged with the material.”



“You get a visual view of the material and can actually picture how parts of the body functions. It's very useful in remembering the material for the exams.”

## Student reaction to JoVE Core as a supplement to primary course materials

36.4%

Useful, really made a difference

48.5%

Sometimes useful, helped in certain topics

12.1%

Did not make a difference

3%

I didn't understand how it helped



“JoVE Core directly contributed to my students having an easy, positive and enjoyable learning experience. They found the animated videos to be accessible, interactive and novel. JoVE Core helped me positively increase student engagement while maintaining my high learning standards. It's a powerful pedagogic tool to promote academic equity, inclusion and diversity. I recommend the school's library subscription make the material available to all students as a supplementary learning tool”

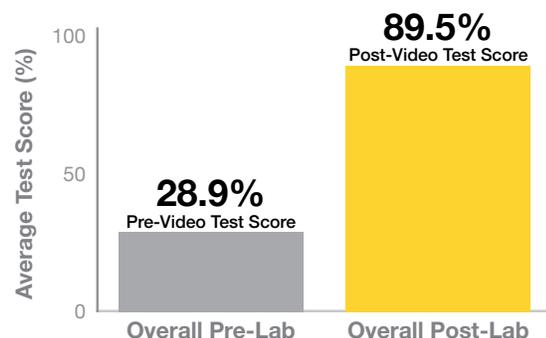
—Jiyun Kim, M.D., Ph.D.,  
Associate Professor at Saint John's University



## Case study: University of California, Los Angeles<sup>2</sup>

- The University of California, Los Angeles (UCLA) is a public research university with over 45,000 enrolled students.
- Over 500 students in a general chemistry course at UCLA were taught four key topics — enthalpy, entropy, rate laws and Le Châtelier’s principle — in traditional lecture formats. They later viewed JoVE videos on each topic.
- Students completed quizzes assessing their understanding of these topics immediately after the lecture, and then after watching the JoVE videos.

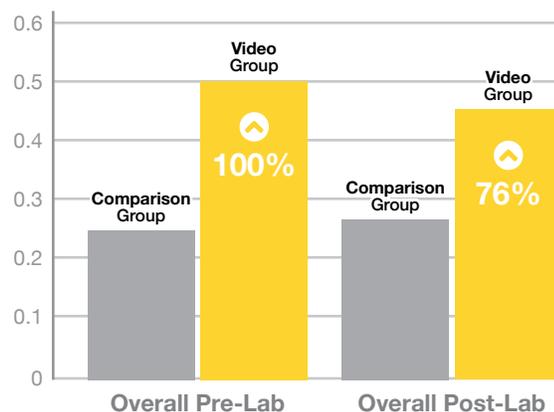
■ JoVE videos were seen to have a significant positive impact on students’ learning and test performance: **average test scores increased from 29% to 89%**.



## Case study: DeSales University and Clemson University<sup>1</sup>

- DeSales University is a private university in Pennsylvania with 3,000+ enrolled students, while Clemson University is a public research university in South Carolina, with over 23,000 students.
- 94 students at DeSales (mostly sophomores) and 252 students at Clemson (freshmen to seniors) viewed relevant JoVE videos prior to conducting biology labs on plasmid purification, gel electrophoresis, spectrophotometry and light microscopy.
- Students were tested on their understanding of core concepts and lab techniques before and after the lab.

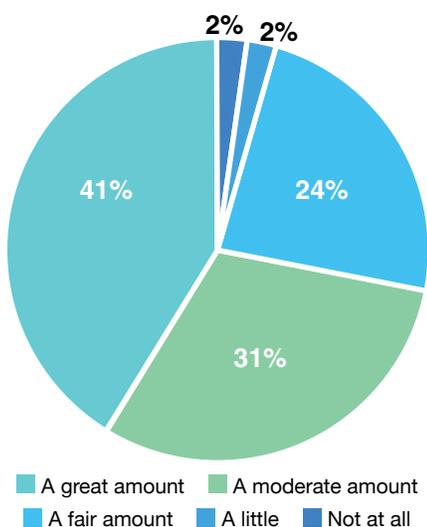
■ Overall, students who watched a JoVE video **performed up to 100% better on pre-lab and post-lab assessments** compared to students who only read the lab handouts.



## Visualization improves concept comprehension

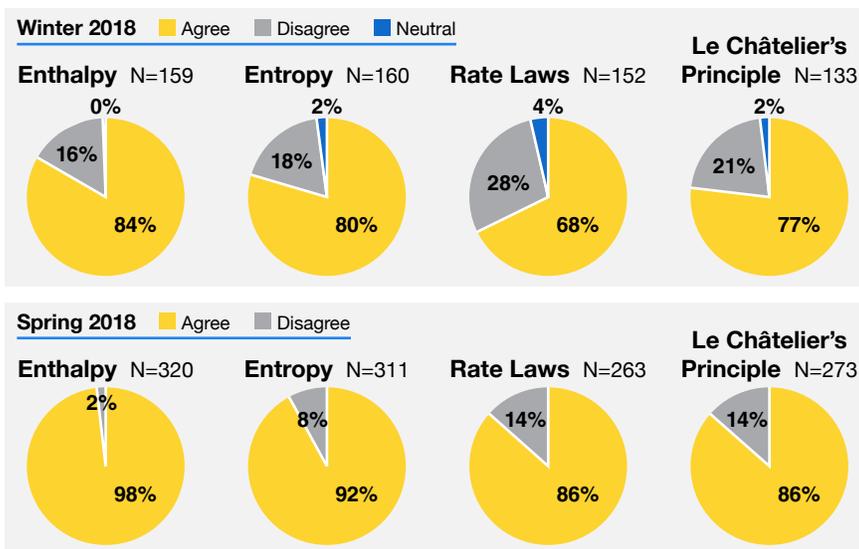
By drawing on real-world examples, experiments and engaging animations, JoVE videos help students quickly visualize abstract scientific concepts.

**96%** reported better comprehension of concepts



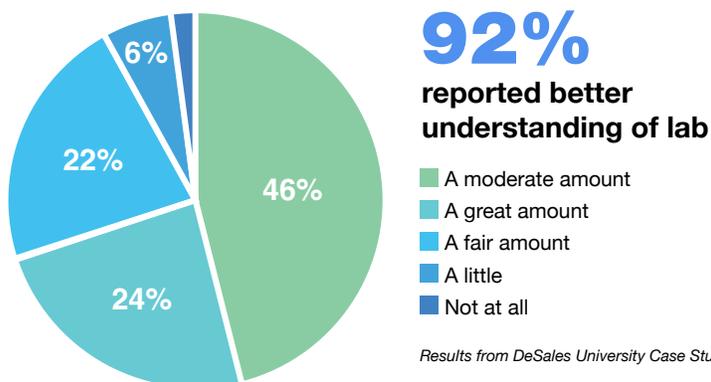
Results from DeSales University Case Study

### The video made it easier for me to understand the topic



## Videos improve students' understanding of lab exercises

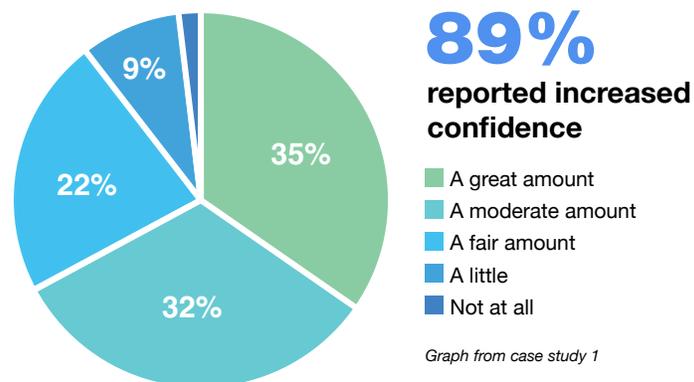
Along with step-by-step demonstrations of lab techniques, JoVE videos also explain the theory behind each experiment, helping students bridge the gap between concepts and their real-life applications.



Results from DeSales University Case Study

## Video increases students' confidence in the lab

When students are able to visualize an experiment or demonstration in advance of a lab, familiarity with the method helps them feel more confident about performing it.



Graph from case study 1

## Videos reinforce prior learning

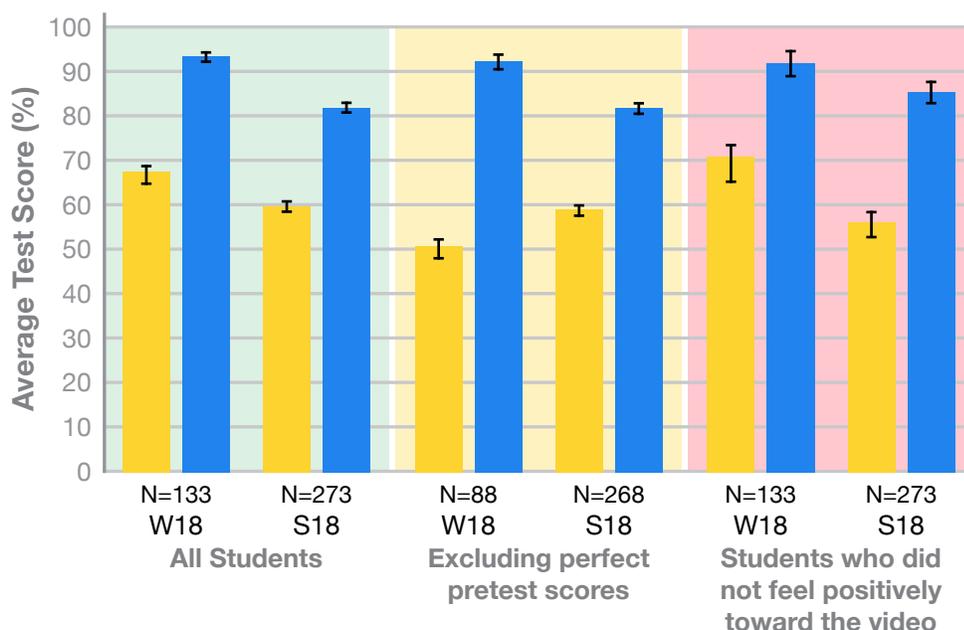
Videos can be watched multiple times unlike a traditional lecture, helping to reinforce learning and resolve students' misconceptions, if any. For instance, in the UCLA study, students who had already studied Le Châtelier's principle in a previous semester still made significant learning gains after watching the JoVE video.

### Students' Understanding of Le Châtelier's Principle

■ Pretest ■ Posttest

Comparison of pretest and posttest quiz scores in winter 2018 (W18) and spring 2018 (S18) for the JoVE Science Education videos on Le Châtelier's principle. The topic in this video was learned in a previous general chemistry course.

Graph from case study 2



## Videos improve engagement with complex topics

With high-impact animations and real experiments performed by scientists, JoVE videos engage and excite students by bringing science to life, and fit a mobile-first lifestyle better than the traditional textbook.

Do you find that a multimedia/video product like JoVE Core is more attractive to you than a traditional textbook?

85.3% Yes

14.7% No

Results from St. John's Case Study



1,000+ universities and colleges use JoVE to teach STEM courses, online and on-campus. We remain committed to supporting these efforts by continuously growing our library of 12,000+ videos on science concepts and laboratory experiments to cover even more disciplines. The JoVE Advantage series discusses the effectiveness of JoVE videos in science research and education and the benefits they provide.

<sup>1</sup>Mulch-Jones, K., Sengupta, N., Minor, V. C., & Goudsouzian, L. K. (2020). Professional science education videos improve student performance in nonmajor and intermediate biology laboratory courses. *Biochemistry and Molecular Biology Education*, 1–9. Advance online publication.

<sup>2</sup>Ramachandran, R., Sparck, M., & Levis-Fitzgerald, M. (2019). Investigating the Effectiveness of Using Application-Based Science Education Videos in a General Chemistry Lecture Course. *Journal of Chemical Education* 96(3), 479–485.

<sup>3</sup>St. John's University Uses JoVE Core to Help Increase Student Engagement. Internal JoVE Report.