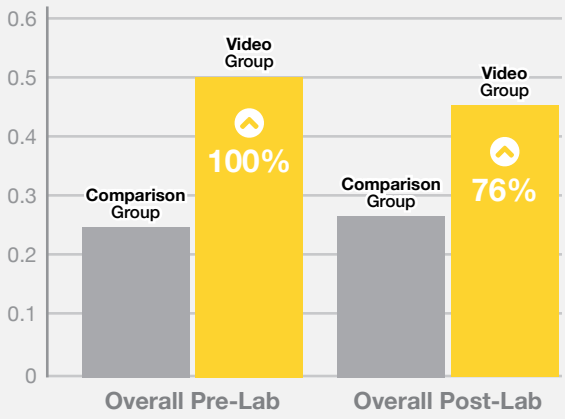
JoVE ADVANTAGE VIDEO EFFECTIVENESS IN EDUCATION

The use of instructional videos has become increasingly common in science courses worldwide. Quickly becoming a competitor to the traditional textbook, video now forms the cornerstone of many offline and online classrooms. But how effective is video as a tool for science education? Here's what our research shows:

Case study 1: DeSales University and Clemson University[1]

- 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.

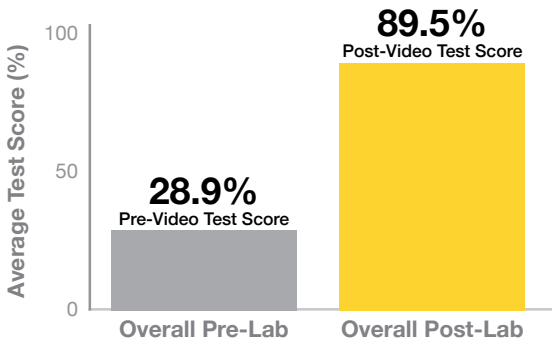
Overall, students who watched a JoVE video **performed up to 100% better on pre-lab and post-lab assessments** compared to students who only read the lab handouts.



Case study 2: University of California, Los Angeles[2]

- 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.

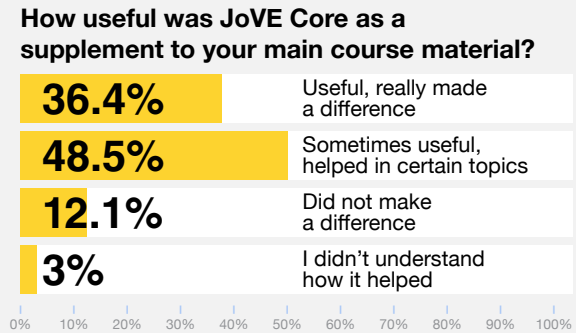
JoVE videos were seen to have a significant positive impact on students' learning and test performance: **average test scores increased from 29% to 89%**.



Case study 3: St. John's University[3]

- St. John's University is a private university in New York with over 20,000 students.
- Associate Professor of Biology Dr. Jiyun Kim used JoVE Core videos to supplement the traditional textbook in her undergraduate Anatomy & Physiology course.

84.9% of students surveyed found JoVE Core videos to be a useful supplement to their course material.

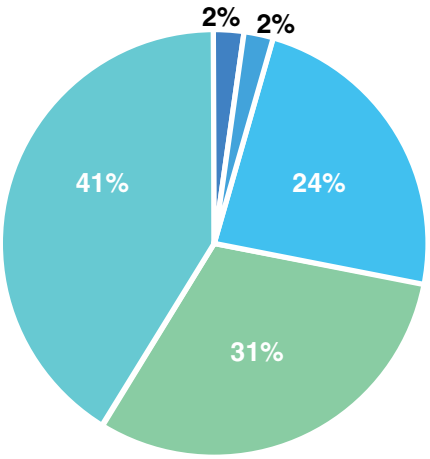


JoVE

Visualization improves concept comprehension

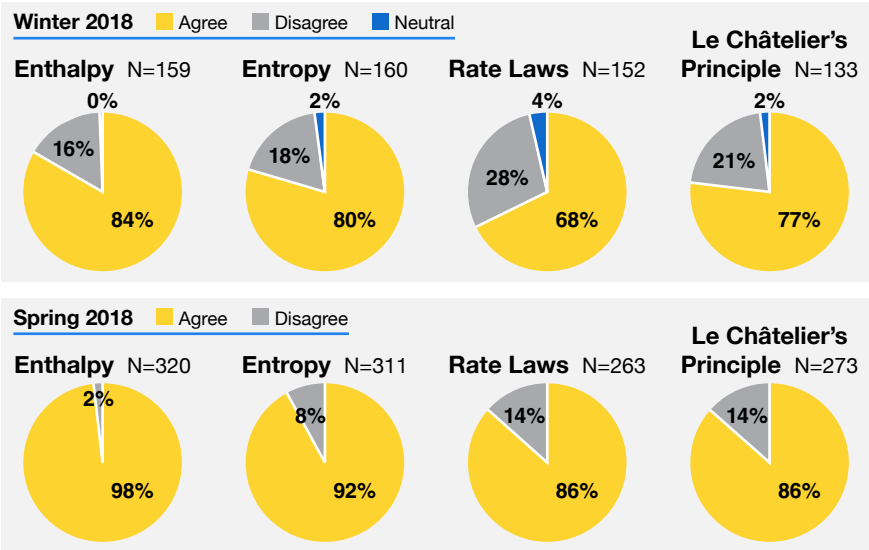
By drawing on real-world examples, experiments and engaging animations, JoVE videos help students quickly visualize abstract scientific concepts.

96% reported better comprehension of concepts



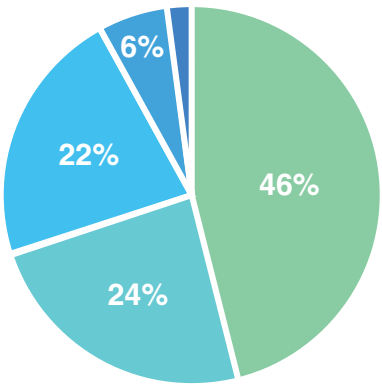
Results from DeSales University Case Study

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.



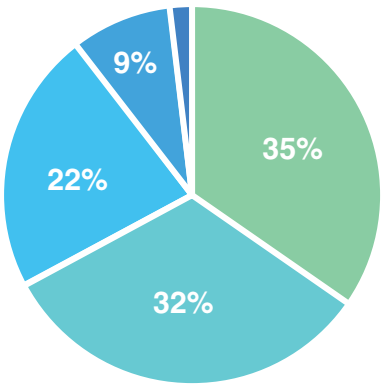
92%
reported better understanding of lab

- A moderate amount
- A great amount
- A fair amount
- A little
- Not at all

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.



89%
reported increased confidence

- A great amount
- A moderate amount
- A fair amount
- A little
- Not at all

Graph from case study 1

Videos reinforce prior learning

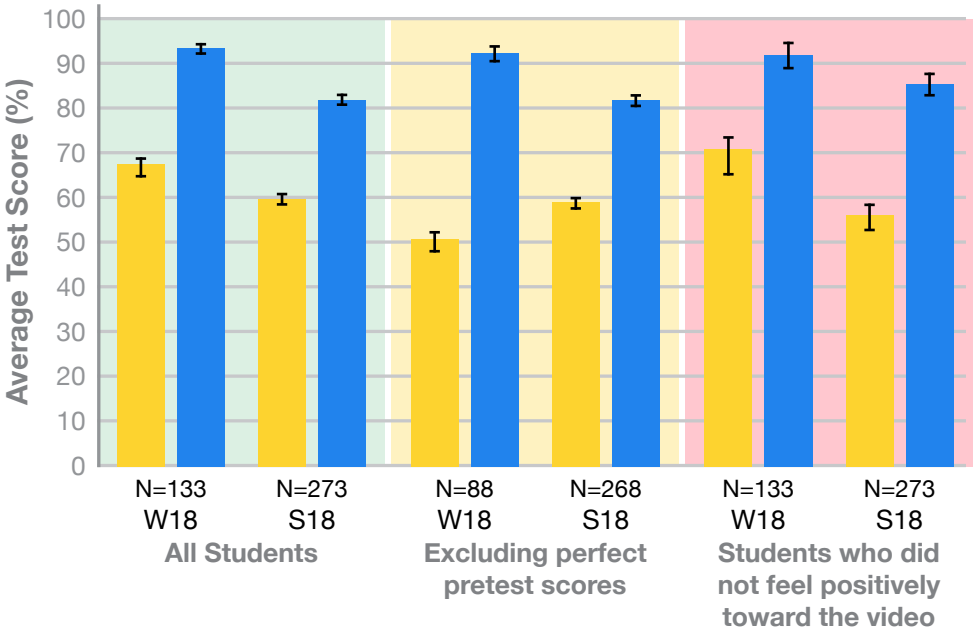
Videos can be watched multiple times unlike a traditional lecture, helping to reinforce learning and resolve students' misconceptions, if any. For instance, in the UCLA study, students who had already studied Le Châtelier's principle in a previous semester still made significant learning gains after 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 Scince Education videos on Le Châtelier's principle. The topic in this video was learned in a previous general chemistry course.

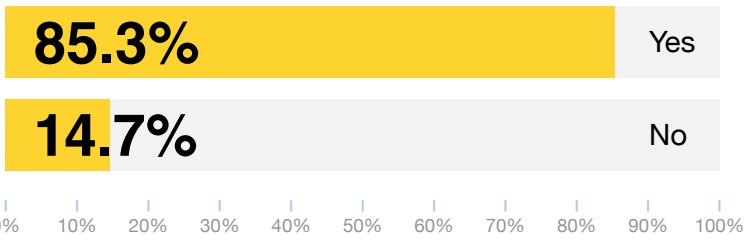
Graph from case study 2



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?



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.

[1] Mutch-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.
[2] 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.
[3] St. John's University Uses Jove Core to Help Increase Student Engagement. Internal JoVE Report.

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