

# How much do students learn when they double the speed of their class videos?

January 11 2022



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Recorded lectures have become a routine part of course instruction during the COVID-19 pandemic, and college students often try to pack more learning into a shorter span by watching these recordings at double

their normal speed or even faster. But does comprehension suffer as a result?

Surprisingly, no—up to a point. A new UCLA study shows that students retain information quite well when watching lectures at up to twice their actual [speed](#). But once they exceed that limit, things begin to get a little blurry, said Alan Castel, the study's senior author and a UCLA professor of psychology.

With 85% of UCLA students surveyed as part of the study reporting they "speed-watched" lecture videos, the researchers engaged students in a series of experiments to test how faster speeds affected learning and knowledge retention.

## **Building Rome in less than 15 minutes**

In one experiment, the researchers divided 231 UCLA undergraduates into four groups and had them watch two 13-to-15-minute lecture videos—one on the Roman Empire and another on real estate appraisals. One group watched at normal speed, one at 1.5 times normal speed, another at double speed and the final group at 2.5 times normal speed. They were instructed not to pause the videos or take notes.

Immediately after the viewings, they were given comprehension tests on the individual videos, each comprising 20 multiple-choice and true-or-false questions. The normal-speed group averaged 26 correct answers out of 40, while the double-time group scored 25 (about the same as the 1.5-speed group). The 2.5-speed group didn't do as well, answering only about 22 questions correctly.

A week later, the same groups were given different tests related to the two videos to assess what they'd retained. The normal-speed group averaged 24 out of 40, the 1.5-speed and double-speed group averaged

21, and 2.5-speed students averaged 20.

"Surprisingly, [video](#) speed had little effect on both immediate and delayed comprehension until learners exceeded twice the normal speed," said lead author Dillon Murphy, a doctoral [student](#) in psychology at UCLA.

In other experiments, the researchers tested various combinations of speed-watching and normal-speed viewing of the two videos. Among the results:

**\* Twice at double speed vs. once at normal speed**

One group of students watched the videos at double speed twice in succession and another watched them just once at normal speed. Both groups answered an average of 25 of the 40 questions correctly immediately following their viewings.

In a related experiment, one group watched the videos once at normal speed while another viewed them initially at double speed, then a week later at double speed again. When tested a week after the first group watched the videos (and shortly after the second group viewed the videos a second time), the speed-watchers performed better, averaging 24 out of 40, versus 22 for the one-time, normal-speed group.

**\* Switching speeds**

A group that watched the videos at normal speed, then at double speed, scored slightly better immediately after their viewings than a group that watched at double speed, then normal speed—26 vs. 24, a difference Murphy said was not statistically significant. When two other testing groups followed the same viewing procedure and were quizzed a week after watching, they both scored 25.

People generally speak at a rate of about 150 words per minute, and previous research has shown that comprehension begins to decline as speech approaches double speed—about 275 words per minute, Castel noted.

He and Murphy said they were surprised and impressed that students could learn, and retain knowledge, at some of the faster speeds.

"College students can save time and learn more efficiently by watching pre-recorded lectures at faster speeds if they use the time saved for additional studying, but they shouldn't exceed double the normal playback speed," Murphy said. "While our study didn't reveal significant drawbacks to watching lecture videos at up to double the normal speed, we caution against using this strategy to simply save time. Students can enhance learning if they spend the time saved on activities such as reviewing flashcards or taking practice tests."

The strategy of speeding up videos may not be effective with especially complex or difficult course material, the researchers noted.

The research is published online in the journal *Applied Cognitive Psychology*.

**More information:** Dillon H. Murphy et al, Learning in double time: The effect of lecture video speed on immediate and delayed comprehension, *Applied Cognitive Psychology* (2021). [DOI: 10.1002/acp.3899](https://doi.org/10.1002/acp.3899)

Provided by University of California, Los Angeles

Citation: How much do students learn when they double the speed of their class videos? (2022,

January 11) retrieved 26 April 2024 from <https://phys.org/news/2022-01-students-class-videos.html>

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