

# Does lecture modality matter? The relationship between students' perception of recorded lectures and retention of content

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## 1 | PROBLEM

Research on best practices for recording lectures focuses mainly on engagement. For example, researchers agree that engaging video lectures are chunked, in short bursts, follow learning goals, and provide signaling.<sup>1,2</sup> However, COVID 19 has spurred larger questions about video lectures that go beyond engagement. The pandemic created a surge in “remote teaching” environments that mimic a passive, face-to-face instructional method simply prepackaged in a recorded lecture modality. This abrupt change posed a problem researchers have not yet examined: How do students perceive and retain content in remote teaching environments that rely heavily on recorded lectures? This question came to the forefront of the University of Michigan Dental Hygiene program after students began voicing their concerns and frustration with this new learning modality. The researchers began to examine how educators can provide learning opportunities that students perceive as beneficial and aid in their retention, given the drastic change in their learning environment.

## 2 | SOLUTION

For example, researchers argue that videos receive a higher number of views when they are directly connected to course assignments and/or have the addition of audiovisual elements.<sup>3</sup> Therefore, the course director implemented a series of different lecture modalities that

appropriately utilized visual elements (eg, annotation) to focus attention on important concepts and check understanding via quizzes on the material from each video. (Table 1).

Weekly quizzes assessed the content knowledge delivered through each specific modality. Quiz questions consisted of multiple choice, true/false, matching, fill in the blank, and essay questions. At the end of the semester, students were asked to rank their lecture modality preference in order from most to least beneficial. At the end of the semester, students were asked to rank order their preference of lecture modalities and explain why. To visualize the relationship between content retention and preference, quiz scores and preferences were averaged and compared (Tables 2 and 3).

## 3 | RESULTS

Forty-three students took part in our survey, while quiz results were taken from 50 students in total. Results from our survey indicated that students in both classes had a stronger preference for the traditional prerecorded lectures with annotation. Students preferred this lecture modality because it helped focus them on important information and was less distracting than a Zoom call. Additionally, this modality had the second highest quiz average in both courses, indicating retention. However, the highest average quiz scores were associated with the “Khan Academy” lecture modality, even though this modality was perceived

TABLE 1 Explanation and description of lecture modalities

Lecture modality	Description	Course(s) used
Traditional PPT	A traditional prerecorded lecture where the instructor narrated over PPT slides.	DHYG 210 Clinical Dental Hygiene 1 and DHYG 422 Pain Control
Traditional PPT with Annotation	A traditional prerecorded lecture where the instructor narrated over PPT slides and added annotation.	DHYG 210 Clinical Dental Hygiene 1 and DHYG 422 Pain Control
Synchronous Lecture with Annotation	A traditional lecture, over zoom, narrating over a PPT, using annotation. (This was recorded and made available).	DHYG 210 Clinical Dental Hygiene 1
“Kahn Academy” lecture	A recording of a virtual whiteboard where the instructor wrote and drew the important terms while narrating.	DHYG 210 Clinical Dental Hygiene 1

TABLE 2 DHYG 422 student lecture modality preferences and associated quiz means

DHYG 422 pain control		
Lecture modality	Mean quiz score*	Mean modality preference*
Traditional PPT	84%	3 (M = 2.42; SD = .8)
Traditional PPT w/ Annotation	91%	1 (M = 1.64; SD = .61)
Khan Academy	92%	2 (M = 1.78; SD = .80)

\*N = 14 Students.

TABLE 3 DHYG 210 student lecture modality preferences and associated quiz means

DHYG 210 clinical dental hygiene 1		
Lecture modality	Mean quiz score*	Mean modality preference*
Traditional PPT	86.5%	3 (M = 2.58; SD = 1.1)
Traditional PPT w/ Annotation	89%	1 (M = 2.17; SD = .90)
Synchronous Lecture with Annotation	88%	2 (M = 2.25; SD = 1.34)
Khan Academy	91%	4 (M = 3.08; SD = .90)

\*N = 29 students.

as less beneficial than prerecorded lectures with annotation in both classes.

In conclusion, while student rankings for various lecture modalities do not fully correlate with higher quiz scores,

students clearly articulated why they had a preference for certain types of lecture modalities. The difference in quiz scores and rationale for certain modalities showcase the need to talk with students about their preferences and provide variation in modalities, when appropriate. However, the common element found among higher quiz scores was a more interactive and focused presentation that used visual elements in a strategic way. More research is needed to explore the role visual elements play with content retention over periods of time in a remote teaching/online learning environment.

## REFERENCES

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