

Videos as Teaching Tools: Not an Easy Way of Learning

Stephan Schwan













Video Lectures / Lecture Captures

- Permanent
- Accessible
- Repeatable
- Controllable
- Para-social
- Vivid





Problems: Video lectures as substitutes

User types



Minority of students uses video lectures as supplement for live lectures





O'Brien & Varna (2019)

Problems: Video lectures as substitutes



Bos, Groeneveld, Bruggen, & Brand-Gruwel (2016)

Massed instead of spaced learning

- Intensive use of video lectures in the weeks before exams
- Better exam scores with regular, distributed use of video lectures across semester



- High percentage of mind wandering episodes during video lectures
- Number of mind wandering episodes increases during a lecture
- Mind wandering rate correlates negatively with lecture comprehension



Risko, Buchanan, Medimorec, & Kingston (2013)

- Habitual multitasking (e.g. simultanous use of social web, news feeds, ...)
- … increases mind wandering
- ... decreases comprehension



Loh, Tan, & Lim (2016)

Journal of Educational Psychology 1984, Vol. 76, No. 4, 647-658 Copyright 1984 by the American Psychological Association, Inc.

Television Is "Easy" and Print Is "Tough": The Differential Investment of Mental Effort in Learning as a Function of Perceptions and Attributions

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Shapter

Learning

Elizabeth L. Bjork and Robert Bjork

Making Things Hard on Yourself, But in a Good Way: Creating Desirable Difficulties to Enhance Learning

















Carpenter, Wilford, Kornell, & Mullaney (2013)







Carpenter, Wilford, Kornell, & Mullaney (2013)

Desirable difficulties ... are desirable because they trigger encoding and retrieval processes that support learning, comprehension, and remembering.



Bjork & Bjork (2011)





How can we reduce students' illusions of understanding?

How do we get students **invest sufficient mental effort** in a video lecture?

How do we support strategies that **increase** storage strength?



Foster active elaboration of lecture content by **Self Assessment**

Prompt students to apply strategies that increase storage strength



- Short videos (< 10min) are watched more completely than medium length videos (10-30 min) and long videos (>30 min)
- Selective viewing: More local seeking behavior in long videos



 Watching videos completely leads to higher exam scores



Break up lectures into separate clips with distinctive topics



Ozan & Ozarslan (2016)



Establish attention catching cues

- Keep eye contact
- Use dynamic drawings



Fiorella, Stull, Kuhlmann, & Mayer (2019)

• Media Diversity



Include a range of different presentation formats (e.g., Talking Head plus Slides, Slides only, Animations, ...)

- BUT: Avoid overload, redundancy and irrelevant details!
- Successive diversity is better than simultaneous diversity



Fanguy, Costley, Baldwin, Lange, & Wang (2019) / Costley & Lange (2017

Foster active elaboration of lecture content by **Self Assessment**

Prompt students to apply strategies that increase storage strength



Test Ouestion:

Which part of a neuron is responsible for passing on the electrical signal that allows it to communicate with other neurons?

- a) Dendrite
- b) Synapse
- c) Axon
- d) Soma
- e) Sodium pump

Read Ouestion:

Which part of a neuron is responsible for passing on the electrical signal that allows it to communicate with other neurons?

- a) Dendrite
- b) Synapse
- c) Axon (Correct Answer)
- d) Soma
- e) Sodium pump



Corrall, Carpenter, Perkins, & Gentile (2020)





Corral, Carpenter, Perkins, & Gentile (2020)



Corral, Carpenter, Perkins, & Gentile (2020)



Introduce active pauses with testing



T = Tested Group, RS = Restudy Group, NT = Nontested Group



Szpunar, Khan, & Schacter (2013)

Introduce active pauses with testing



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Szpunar, Khan, & Schacter (2013)

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Szpunar, Khan, & Schacter (2013)

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Prompt students to apply strategies that increase storage strength



Prompts



Prompts **activate** already **available strategies** that learners are able to apply, but will not do it or will apply them to an insufficient degree



Scheiter, Schüler, & Eitel (2017)

- Initial explanation how to use video lectures
- Foster spaced learning through Notifiers of lectures going online
- Use Teasers for announcement of live lecture highlights
- Insert Self-Explanation Prompts throughout video lecture



Advance preparation: Short chapters with distinct topics

Catch and keep attention

Provide "user manual"

Use notifiers and teasers



Break up lecture into small clips

Include diverse presentation formats

Insert self-explanation prompts

Include quizzes



Advance preparation: Short chapters with distinct topics

Catch and keep attention

Break un lecture

Prov

Help students to choose demanding learning strategies voluntarily

and teasers



Include quizzes



Thank You for Your Attention.

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