

How I make video lectures and use them in my teaching

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Youtube: molmodbasics

Blog: Molecular Modeling Basics & Proteins and Wave Functions

Background

USA 1986 – 2006

Assoc./Professor KU 2006 - now

Computational Bio-Chemist

Lectured 1996 - 2011



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Advantages of *Good* Video Lectures

Watch any time

Pause / Repeat

Manageable (max 7 minutes)

Contain questions

Can include animation/video

No “getting behind”

Faster to make than detailed lecture notes

(Can also be used for detailed solutions to homework)

Freedom from textbook

If you like your textbook, fine but most textbooks ...

... contain too much stuff (**cognitive load**)

... are “just in case” instead of “**just in time**”

... don't differentiate importance of topics

... pretend the computer/internet doesn't exist



Video lecture instead of/in addition to reading or lecture



$$K = [\text{Pb}^{2+}][\text{I}^{-}]^2 \quad K = e^{-\Delta G^{\circ}/RT}$$

$$\Delta G^{\circ} = 46.1 \text{ kJ/mol} \Rightarrow K = 5.93 \times 10^{-9} \quad 20 \text{ }^{\circ}\text{C}$$

$$\Rightarrow [\text{Pb}^{2+}] = 1.14 \times 10^{-3} \text{ M}$$

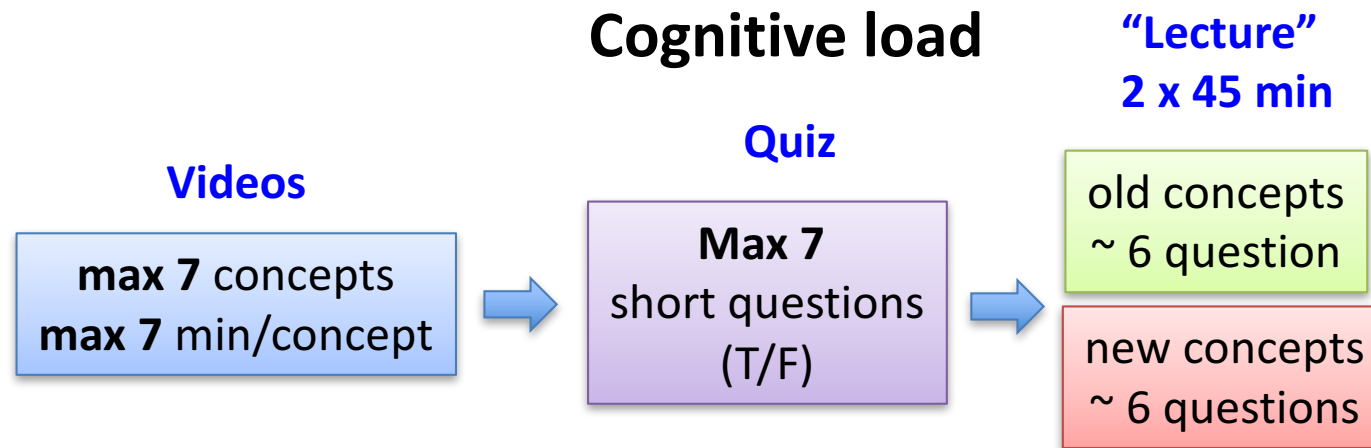
$$\text{målt: } [\text{Pb}^{2+}] = 1.37 \times 10^{-3} \text{ M}$$

Mere Pb^{2+} opløst end forventet!

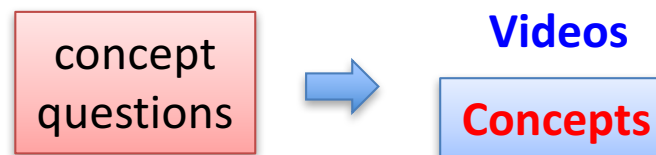
<http://youtu.be/Va5LJ8UX7sY>

Tools: PPT + **Screenflow** (Mac) or **Camtasia** (PC) + head phones

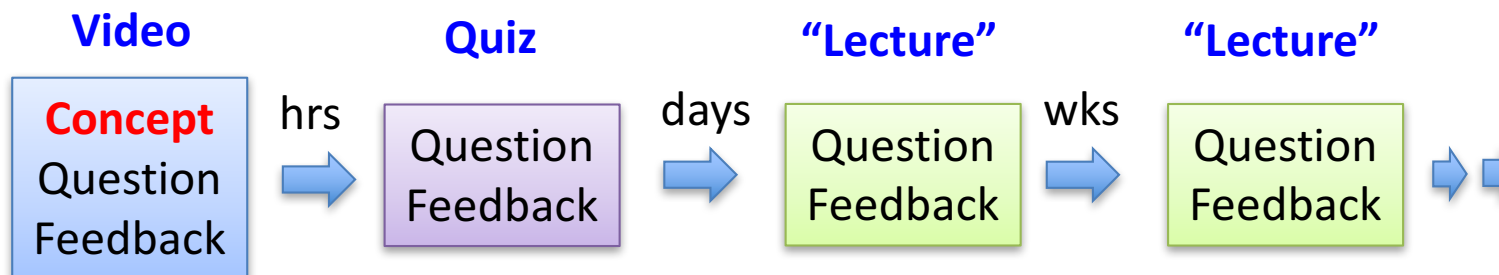




“Just in time” instead of “just in case”



Spaced learning & Formative assessment



The flipped classroom / active learning

Before class: acquire knowledge

Read or watch videos

Take a quiz

In class: use knowledge

Peer instruction

Question => Discuss => vote

> 75% correct => proceed

> 40% correct => Discuss => re-vote

< 40% correct => Lecture



Some inspiration

Confessions of a converted lecturer

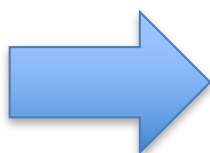
<http://youtu.be/WwslBPj8Ggl> (1 hr)

<http://youtu.be/rvw68sLlfF8> (20 min)

<http://youtu.be/hbBz9J-xVxE> (5 min)

Excellent advice on teaching from Nobel Laureate Carl Wieman

<http://proteinsandwavefunctions.blogspot.dk/2013/07/excellent-advice-on-teaching-from-carl.html>



Active Learning: Tools and Tips – an ebook

<http://tinyurl.com/janstips>

The 5 minute university

<http://youtu.be/kO8x8eoU3L4>

Slides from this talk:

<http://proteinsandwavefunctions.blogspot.com/2014/11/i-lecture-no-more.html>

An older version of this talk:

<http://youtu.be/9sPusuY3a1c>

