What is eGlass?

What can you do with eGlass?

You can

- Record video for asynchronous instruction

You can

- Use Zoom/Teams for synchronous instruction

You can

- Overlay media and applications (images, PPT, word, PDF, excel, web browser, etc.)

You can

- Removes the background from your content

You can

- Take SnapShots

You can

- Flip image

You can

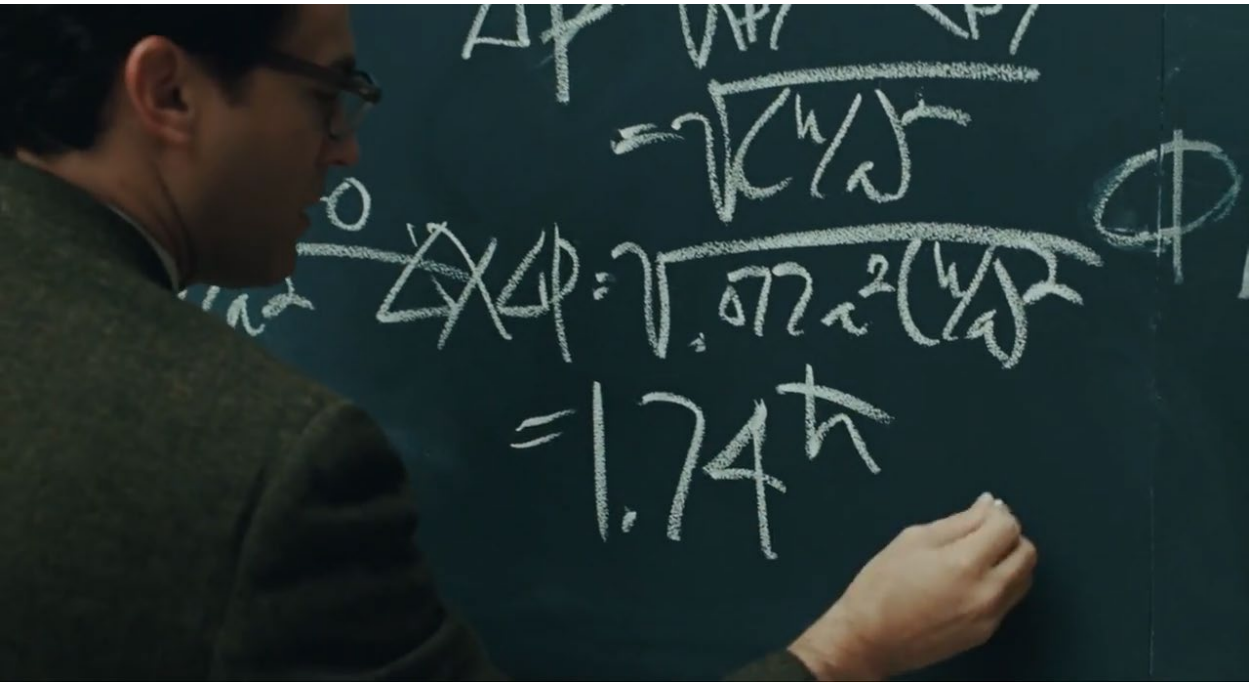
- Zoom in and out

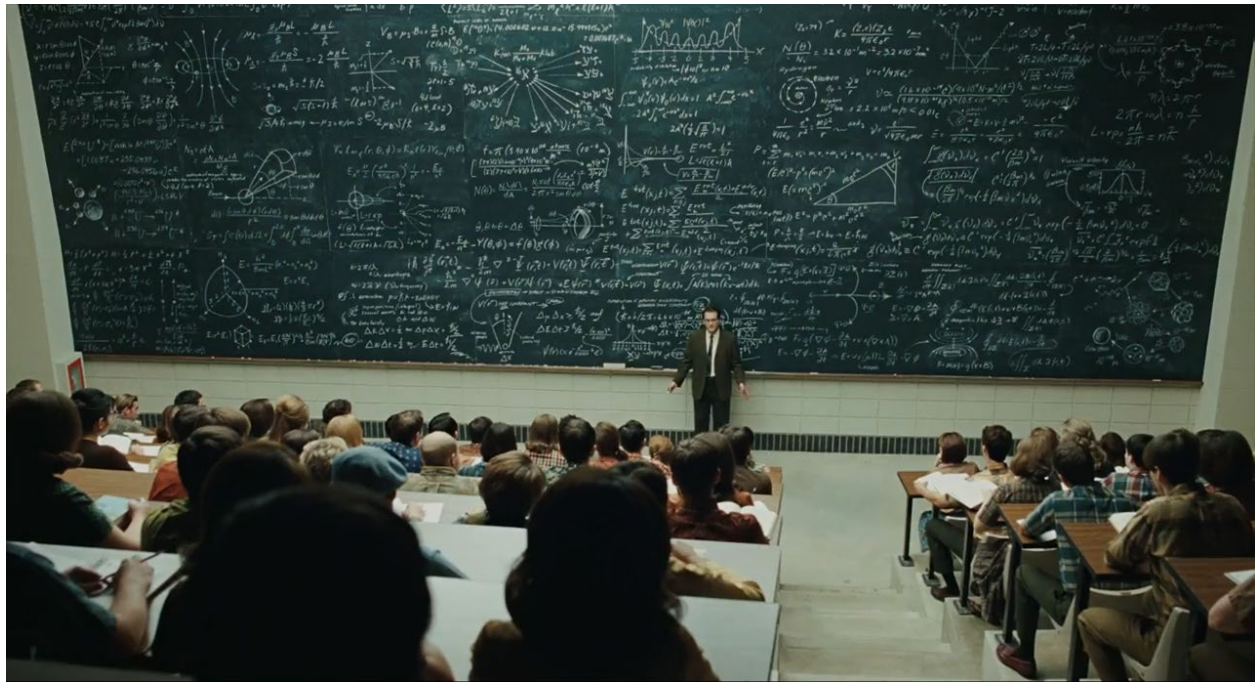
You can

- Annotate

What are the benefits of using eGlass?

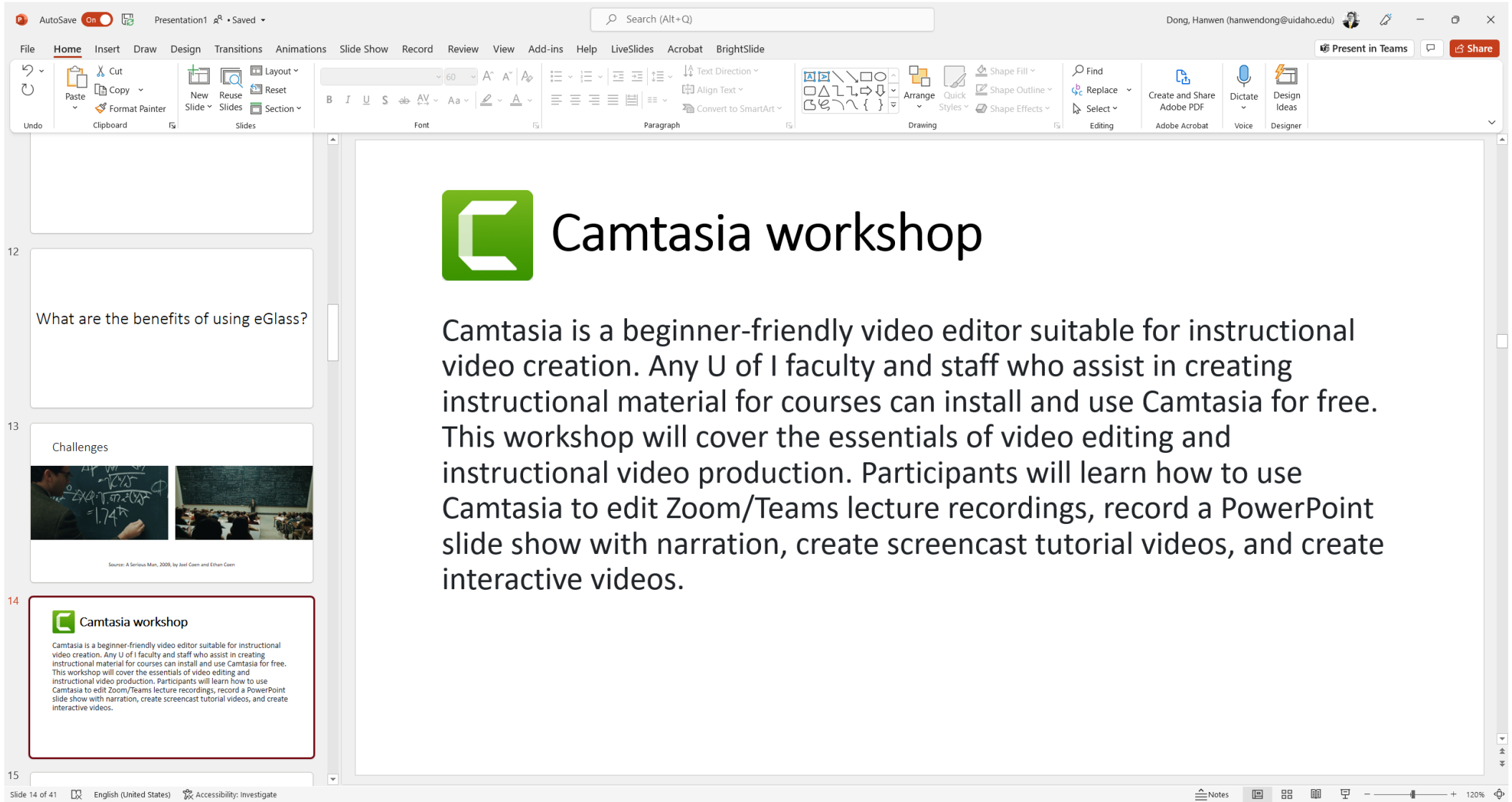
Challenges





Source: A Serious Man, 2009, by Joel Coen and Ethan Coen

Text-heavy PPT Slides..



Students prefer*

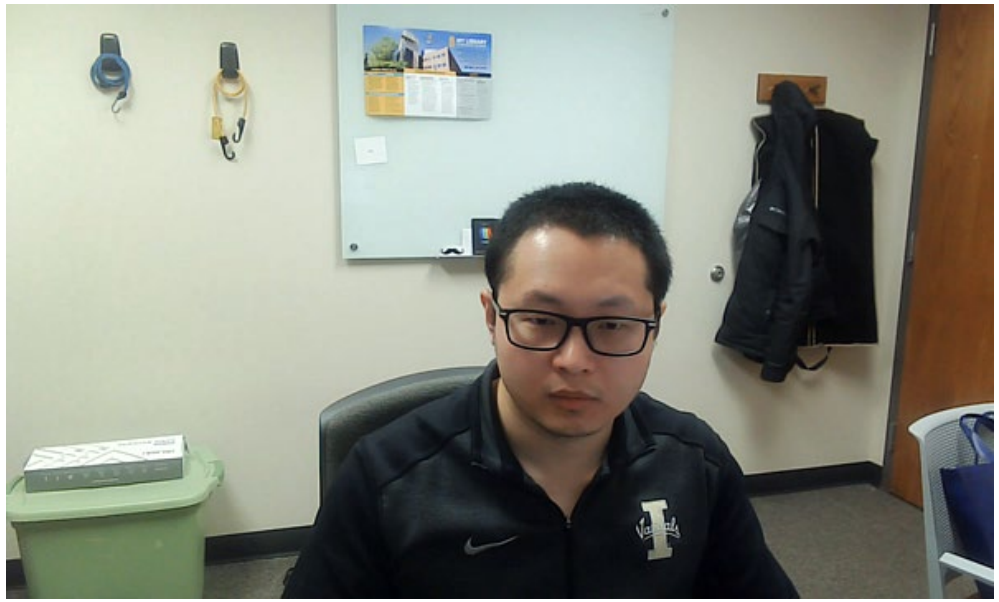
- Shorter videos
- Instructor's talking head
- Instructor drawing freehand

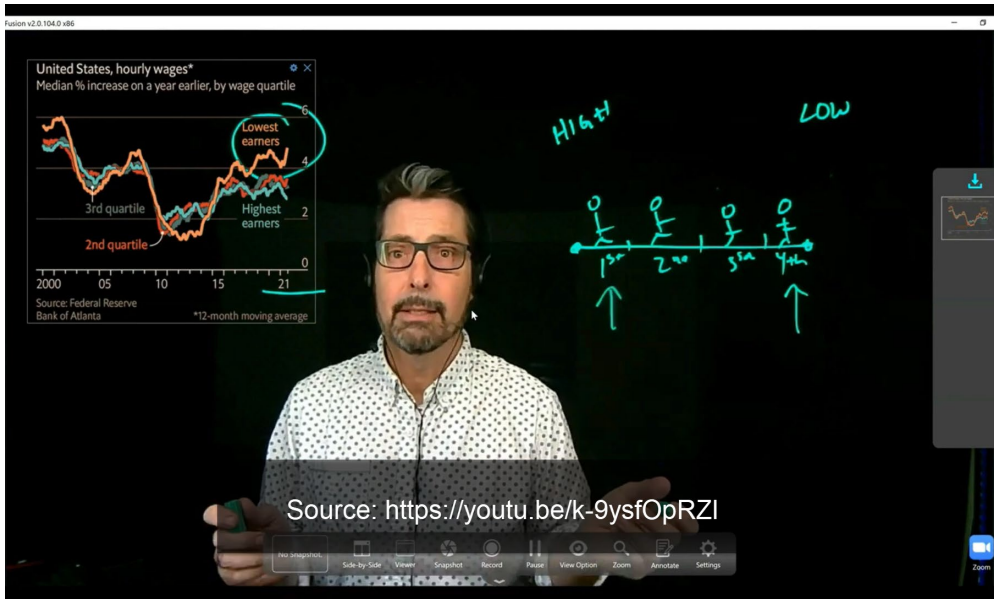
*Guo, P. J.; Kim, J.; Rubin, R. How video production affects student engagement: an empirical study of MOOC videos. Proc. First ACM Conf. Learn. Scale Conf. 2014, 41−50. https://doi.org/10.1145/2556325.2566239

*Kokoç, M., Iigaz, H., & Altun, A.. (2020). Effects of sustained attention and video lecture types on learning performances. Educational Technology Research and Development, 68(6), 3015–3039. https://doi.org/10.1007/s11423-020-09829-7

eGlass allows you to

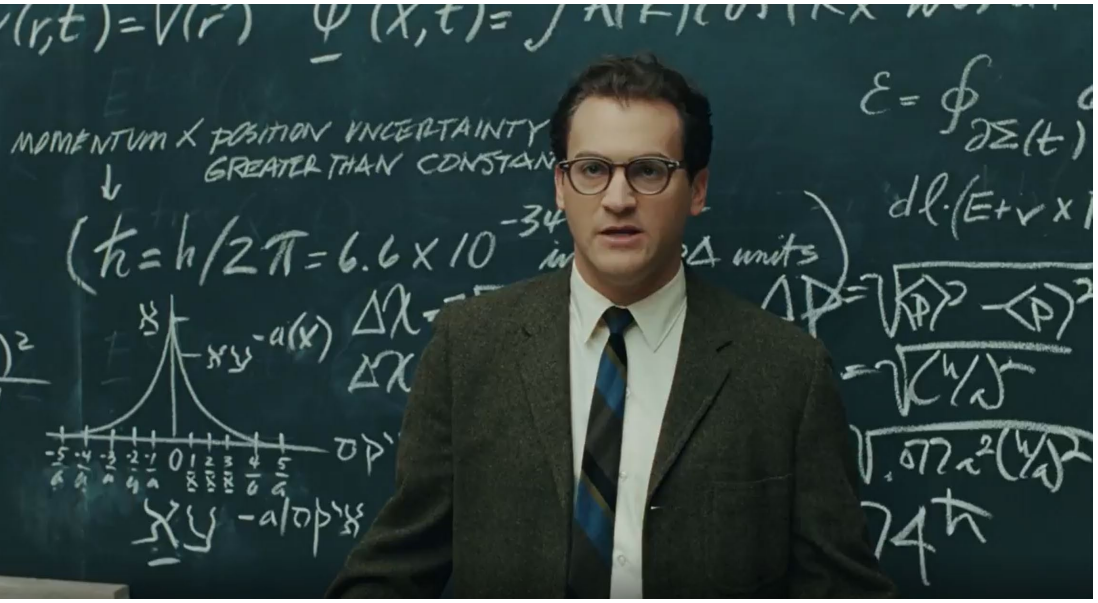
- Maintain eye contact with students

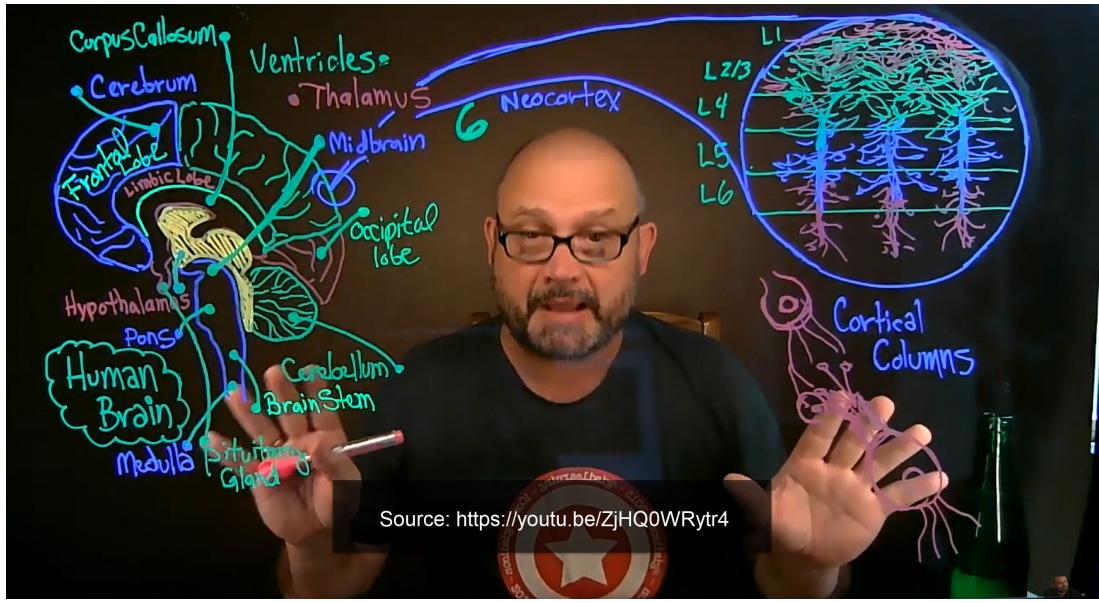




eGlass allows you to

- Not have the writings and drawings obscured by your head or body





eGlass allows you to

- Capture facial expressions, gaze, gestures, and body language along with the writing

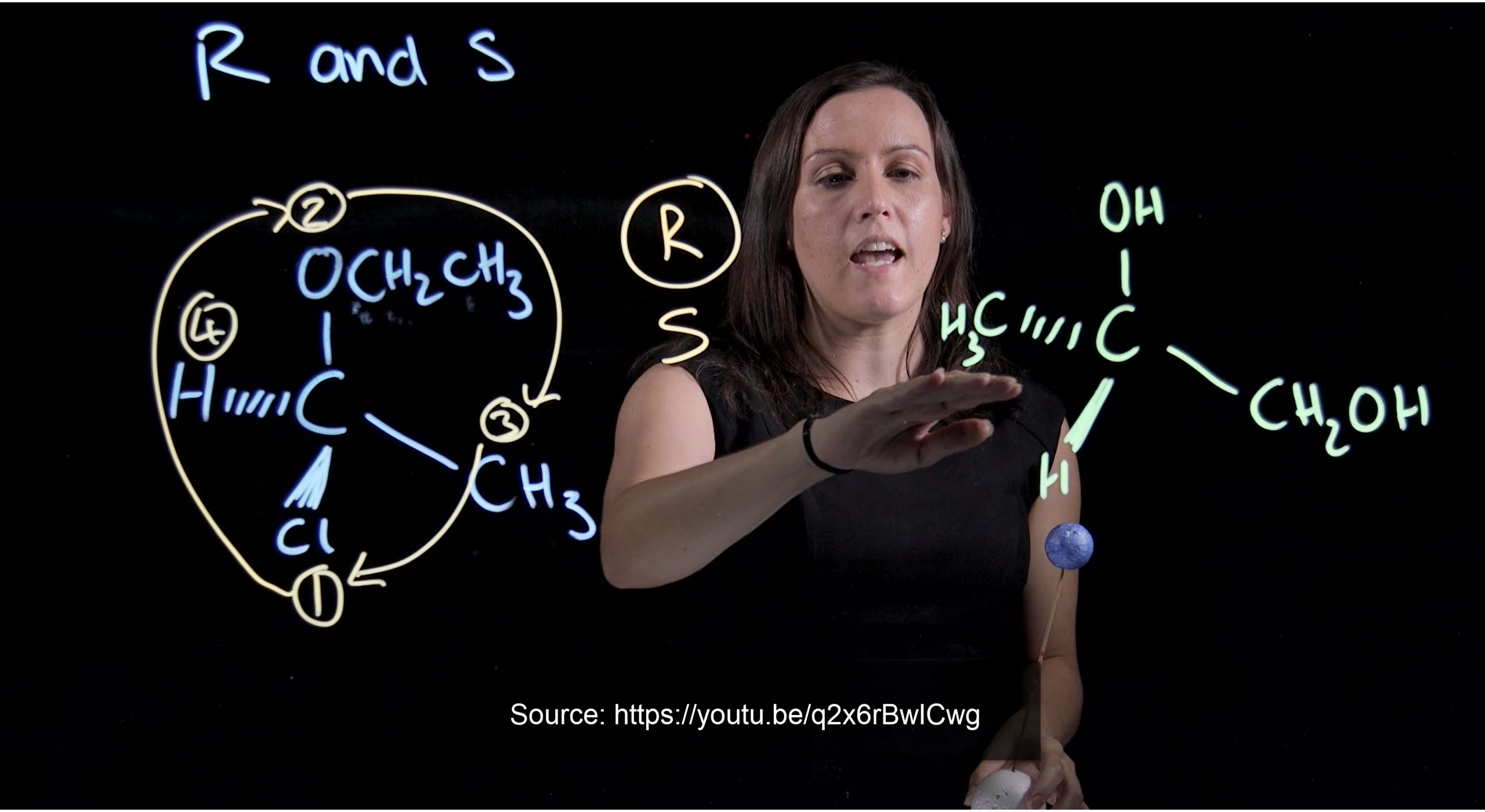
eGlass allows you to

- Deliver effective instruction that students would respond positively

Sample research on the effectiveness of eGlass-type videos

- Fiorella, L., & Mayer, R. E. (2016). Effects of observing the instructor draw diagrams on learning from multimedia messages. Journal of Educational Psychology, 108(4), 528–546. https://doi.org/10.1037/edu0000065
- Hite, K. R., Dawson, J. M., Ahern, T. C., Slimak, L. L., & Korakakis, D. (2017). Effects of lightboard usage on circuit problem skills. 2017 IEEE Frontiers in Education Conference (FIE), 1–4. https://doi.org/10.1109/FIE.2017.8190529
- Schweiker, S. S., Griggs, B. K., & Levonis, S. M. (2020). Engaging Health Student in Learning Organic Chemistry Reaction Mechanisms Using Short and Snappy Lightboard Videos. Journal of Chemical Education, 97(10), 3867–3871. https://doi.org/10.1021/acs.jchemed.0c00619
- Rogers, P. D., & Botnaru, D. T. (2019). Shedding Light on Student Learning through the Use of Lightboard Videos. International Journal for the Scholarship of Teaching and Learning, 13(3). https://eric.ed.gov/?id=EJ1235871
- Choe, R. C., Scuric, Z., Eshkol, E., Cruser, S., Arndt, A., Cox, R., Toma, S. P., Shapiro, C., Levis-Fitzgerald, M., Barnes, G., & Crosbie, R. H. (2019). Student Satisfaction and Learning Outcomes in Asynchronous Online Lecture Videos. CBE—Life Sciences Education, 18(4), ar55. https://doi.org/10.1187/cbe.18-08-0171
- Swenson, M. J., Spence, T., & Smentkowski, B. (2021). Student-led development of a lightboard to enhance future student learning. International Journal of Mechanical Engineering Education, 03064190211026229. https://doi.org/10.1177/03064190211026229
- VanderMolen, J., Vu, K., & Melick, J. (2018). Use of Lightboard Video Technology to Address Medical Dosimetry Concepts: Field Notes. Current Issues in Emerging ELearning, 4(1). https://scholarworks.umb.edu/ciee/vol4/iss1/6
- Rogers, P. (2018, August 7). Using Lightboard Video Lectures to Improve Student Learning in a Flipped Classroom Environment. 2018 ASEE Conferences - Conference for Industry and Education Collaboration / San Antonio proceedings. https://peer.asee.org/using-lightboard-video-lectures-to-improve-student-learning-in-a-flipped-classroom-environment

What are some examples of using eGlass for instruction?



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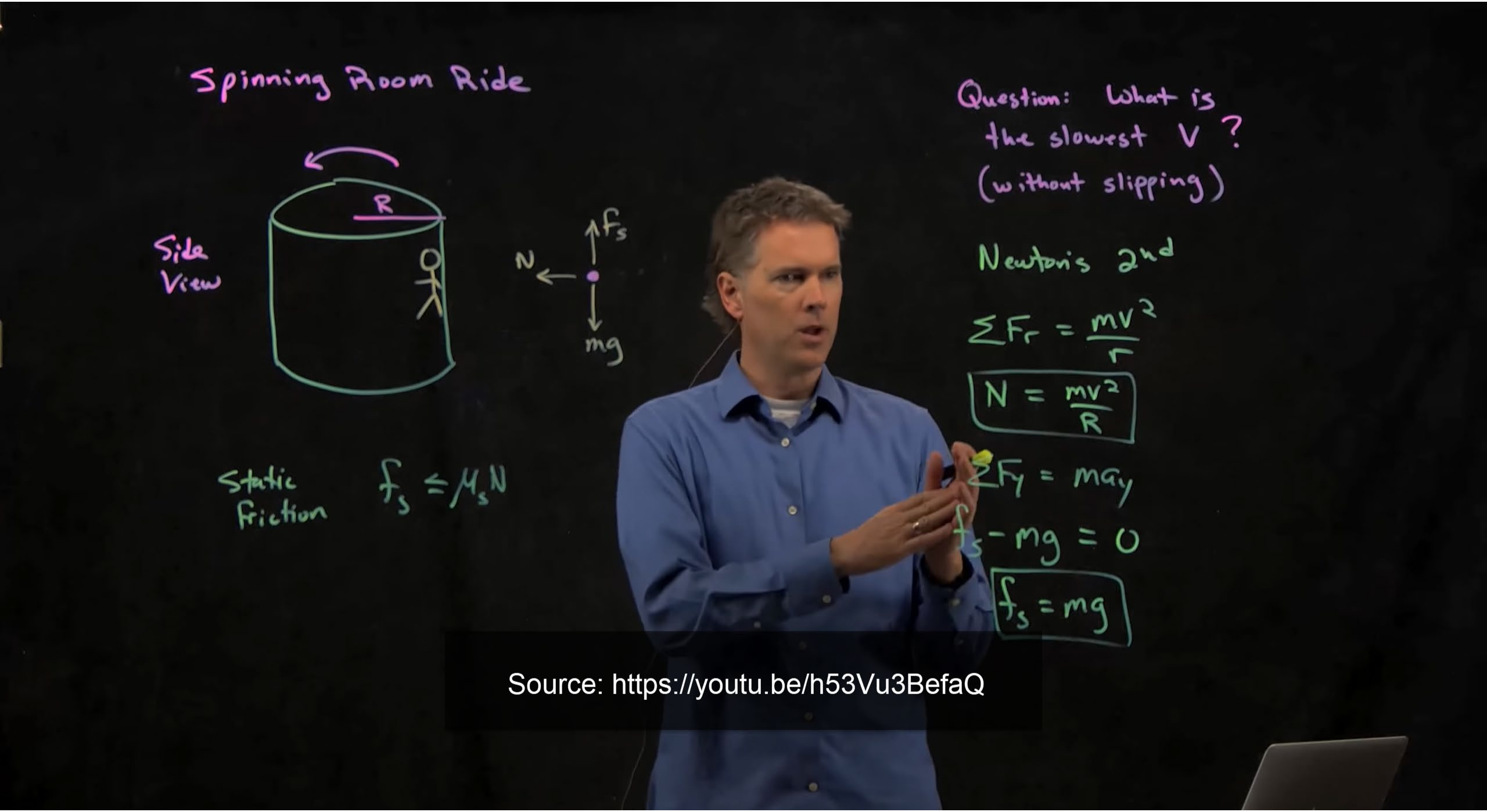

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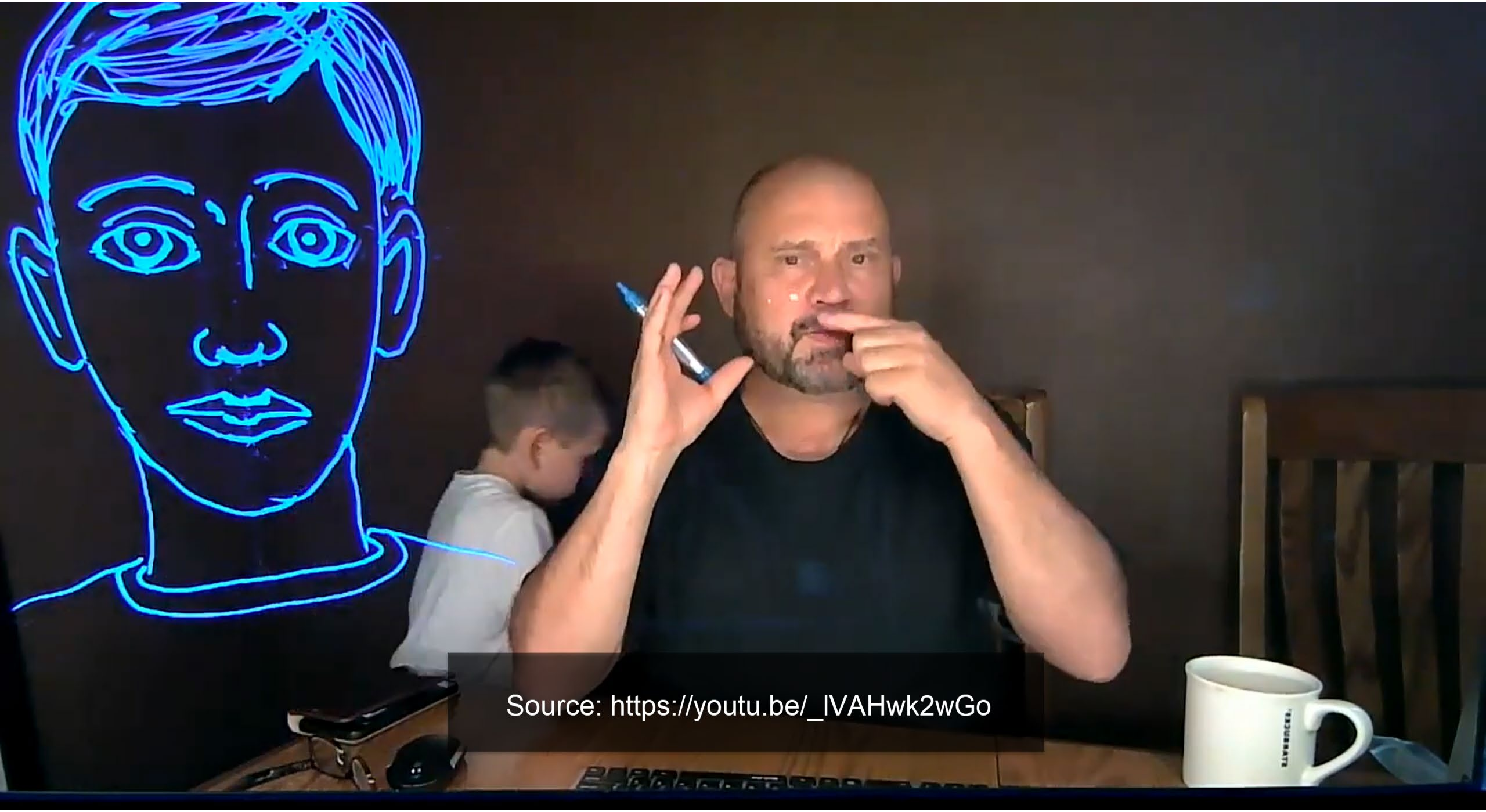
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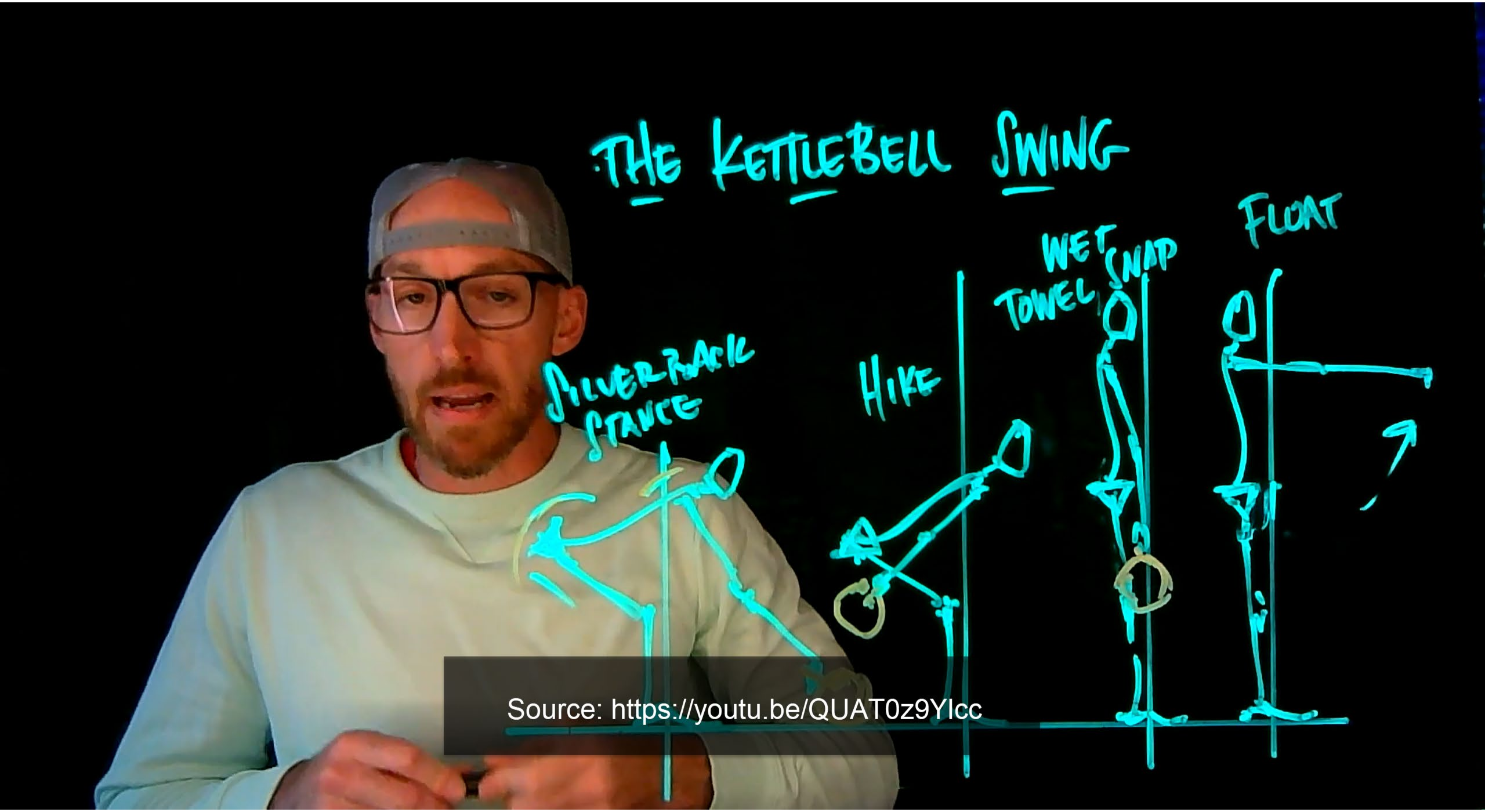
Source: https://youtu.be/-itFMMeU-mw



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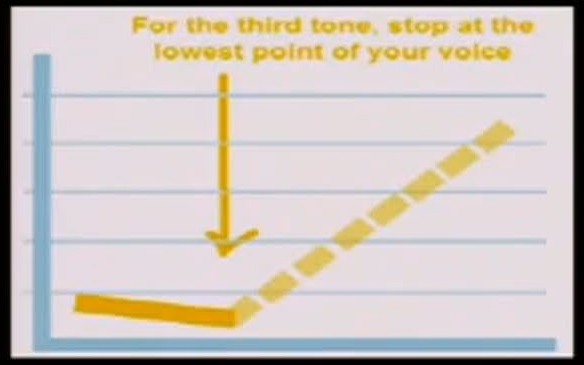

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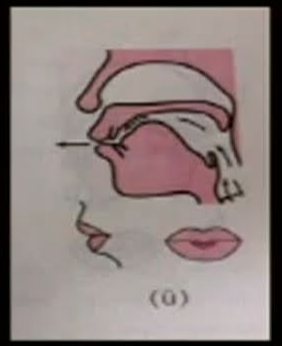
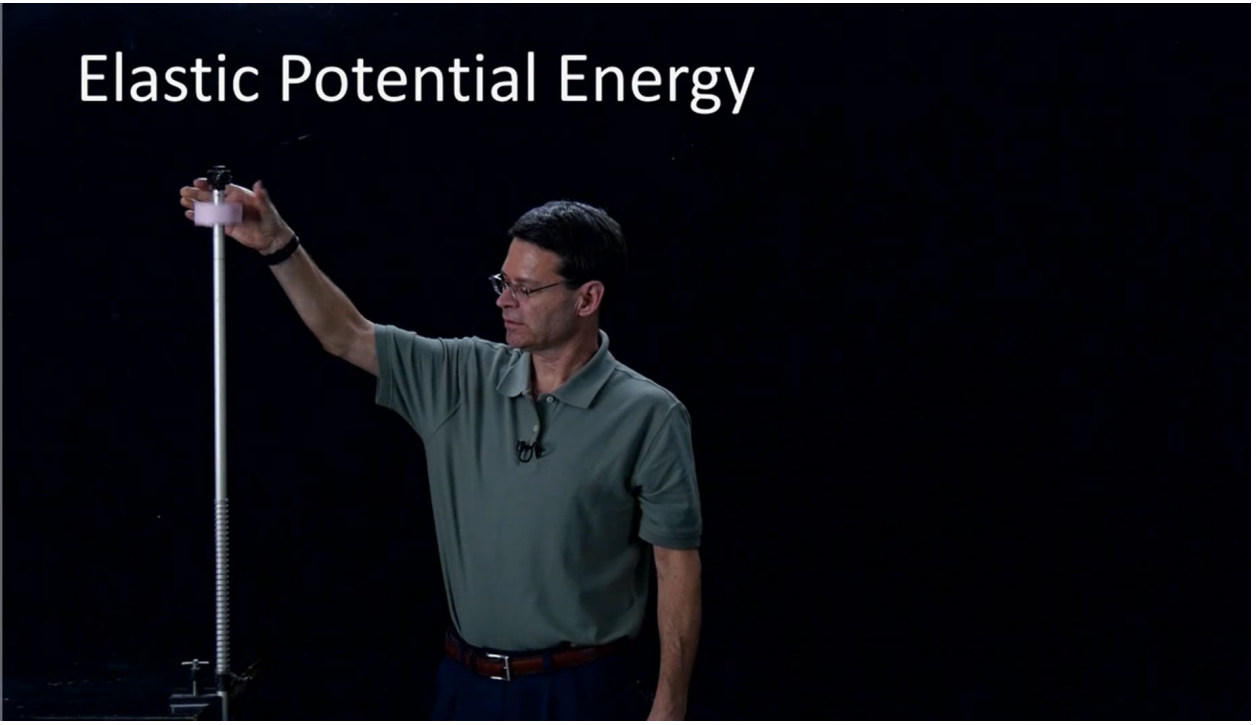


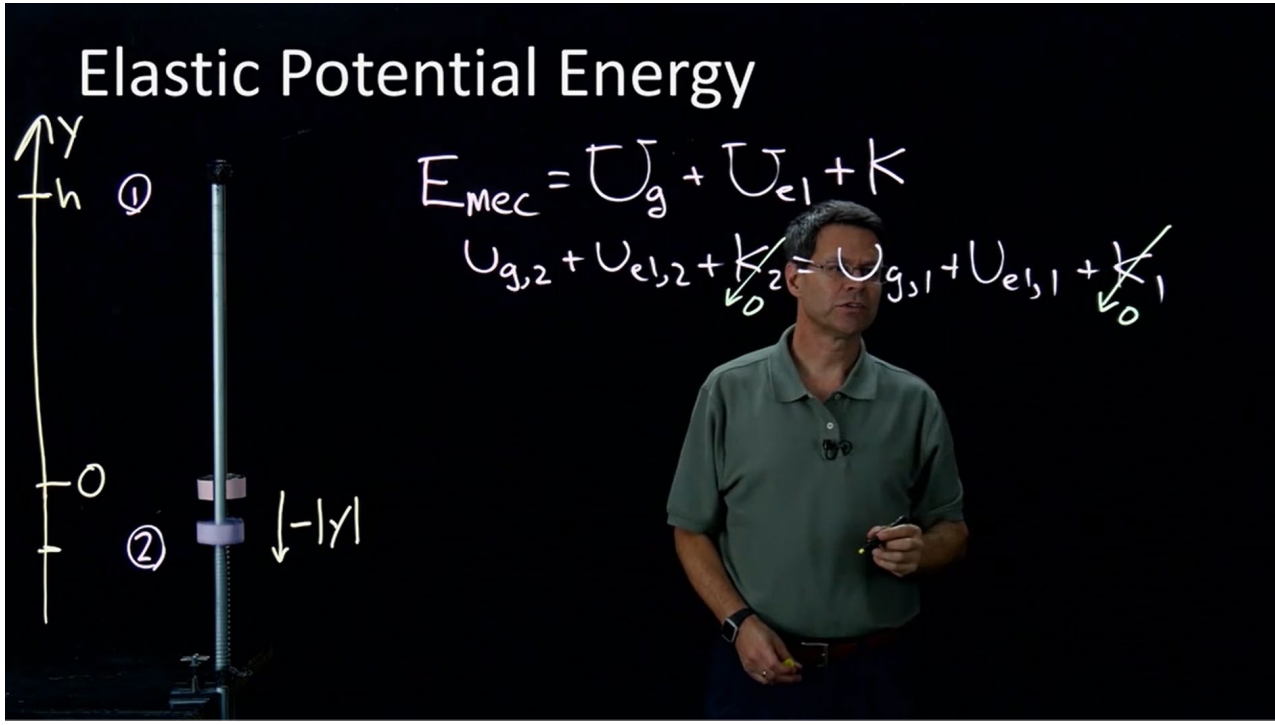
Practice

qū区 yú鱼 nǚ女 lǜ绿

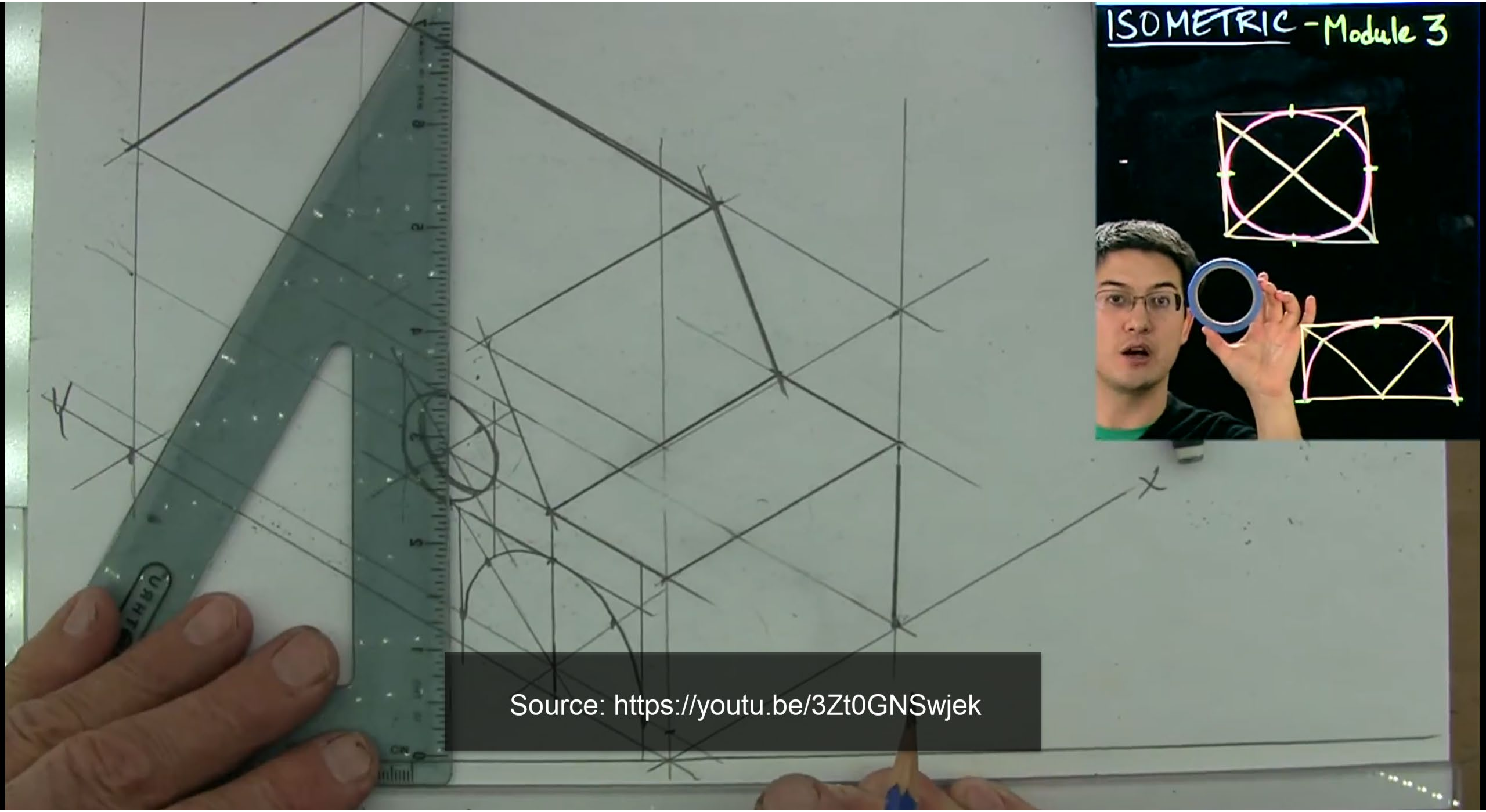
mǔnǚ母女 fǎlǜ法律

Source: https://youtu.be/x78hjsjJWfY





Source: https://mediasite.video.ufl.edu/Mediasite/Play/7c44307b942f424c8bdde637b716dd021d



Source: https://youtu.be/3Zt0GNSwjek

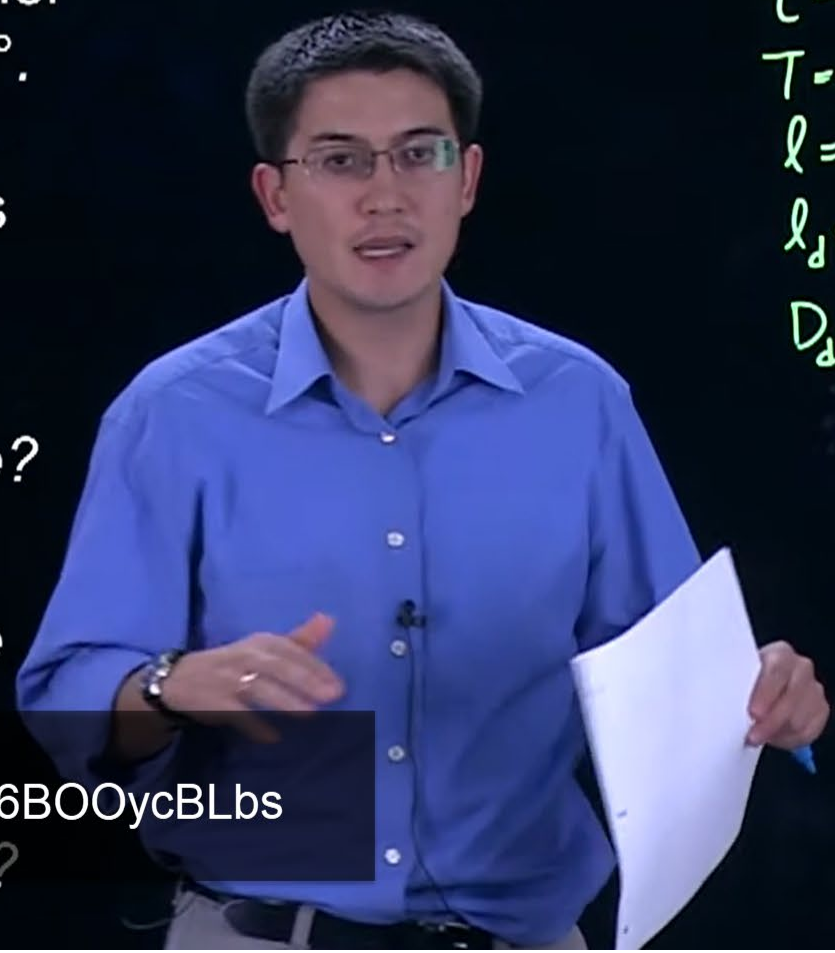
Extruder Example Problem

- Extruder has a barrel diameter of 100*mm*. The screw rotates at 100*rpm*, has a channel depth H = 6*mm*, and a flight angle θ=17.5°. The extruder makes round polyethylene solid rod, and the extrusion temperature is 250°C. The viscosity η = 80 Ns/m^2.

a) What is the highest flow rate achievable?

b) If the extruder is 2.5 m long, and the die has a length of 1mm and diameter of 5mm, what is the flow rate through the die? What if the die diameter is 10mm?

$D = 100\,mm$
$\Theta = 17.5°$
$N = 100\,rpm$
$H = 6\,mm$
$\eta = 80\ Ns/m^2$
$T = 250°C$
$l = 2.5\,m$
$l_d = 1\,mm$
$D_d = 5\,mm$



Source: https://youtu.be/86BOOycBLbs

a) $Q_d = \frac{\pi^2 D^2 H N \sin\theta \cos\theta}{2}$, $Q_p = 0$

$= \pi^2 (100\,mm)^2 (6\,mm)(100\,rev/min)(\sin 17.5^\circ)(\cos 17.5^\circ)(0.5)$

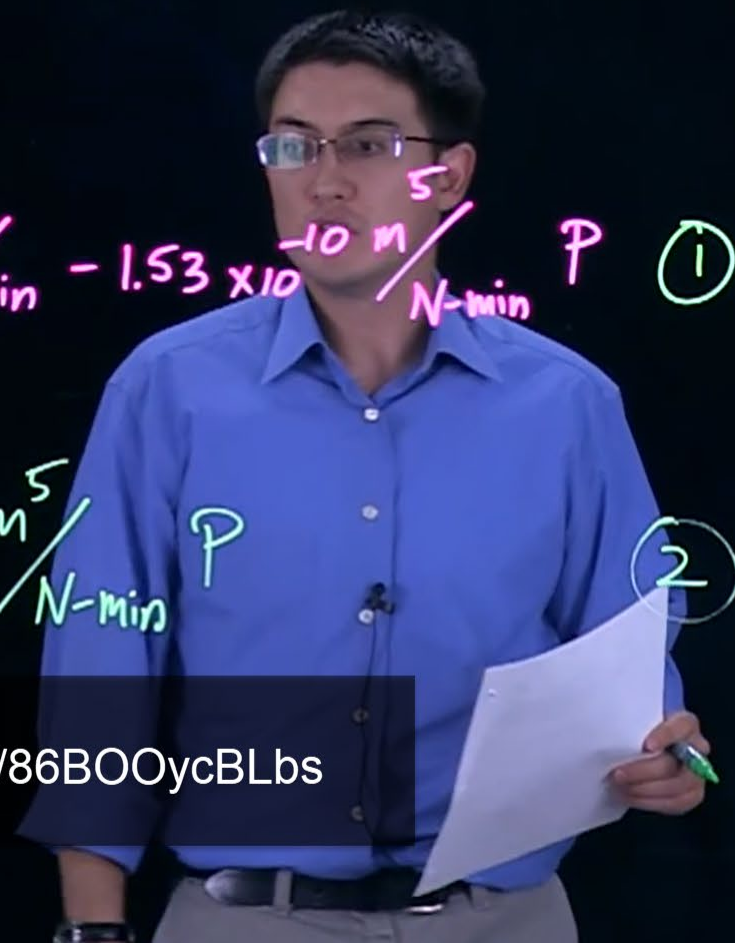
$\boxed{Q_d = 8.49 \times 10^6\ mm^3/min}$

b) $Q_{total} = Q_d - \frac{\pi D H^3 \sin^2\theta\, p}{12 \eta l} = 0.00849\ m^3/min - 1.53 \times 10^{-10}\ m^5/N\text{-}min\ P$ (1)

Die Characteristic

$Q = Kp = \frac{\pi D_d^4}{128 \eta l_d} P = 1.15 \times 10^{-8}\ m^5/N\text{-}min\ P$ (2)

$D = 100\,mm$
$\theta = 17.5^\circ$
$N = 100\,rpm$
$H = 6\,mm$
$\eta = 80\ Ns/m^2$
$T = 250^\circ C$
$l = 2.5\,m$
$l_d = 1\,mm$
$D_d = 5\,mm$



Source: https://youtu.be/86BOOycBLbs

What are some best practices* of using eGlass?

Schmid, Kristina; McCandless, Peter; and Gomez, Eddie, "Dynamic Lightboard Videos" (2019). UNLV Best Teaching Practices Expo. 77. https://digitalscholarship.unlv.edu/btp_expo/77

Tips from the experts

- Use color to display concepts.

Tips from the experts

- Do not try to write everything down in real time.

Tips from the experts

- Plan your talk before the recording session begins.

Tips from the experts

- Look into the camera often as if students are present and watching

Tips from the experts

- Five minutes! One topic, one board, stop.

Tips from the experts

- Pause before starting. Look at the camera.

Tips from the experts

- Wear dark clothing. No text or logo on your shirt.

Tips from the experts

- During filming, look at what you are writing while you are writing it.

Tips from the experts

- Don’t strive for perfection. Good enough is good enough.

Questions?