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Hitting Pause on Organic Chemistry

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Challenges for students and teachers in organic lab:

Technical jargon (reflux, separatory funnel, distillation head, etc.)

Students are overwhelmed and intimidated

-translates to not learning (so what is the point...)

Connecting lecture material to experimental part of lab

-experiments should reinforce lecture concepts

Difficult to explain with words how to perform an experiment

-think how successful cooking shows/videos are compared to written recipes

Reality: Chemists in the industrial world are shown how to do every operation

Organic Lab Lecture - Before

Lab lecture: 40-60 min in length

Issues:

-students would come to lab 10-15 after the start

-after a 45 min lecture: “what are we supposed to do?”

“Is this what it’s supposed to look like?”

“My compound turned into a solid; is it supposed to?”

“My silica gel doesn’t dissolve and gets stuck in the column.

“My solution is boiling but isn’t evaporating. What did I do wrong?”

“When I added CaCl_2 , it didn’t dissolve. What do I do?”

Example Video

[column chromatography](#)

<http://www.youtube.com/watch?v=DcPk19LntDs&feature=youtu.be>

-TLC

-making a slurry with silica gel and mobile phase

-packing the column

-loading the sample onto the column

measuring 100 μ L with a syringe

-getting separation of components on the column

Video Organic Lab Lecture

Lab lecture: ~15 minutes (safety, waste disposal, theory of experiment, etc.)

Students are more successful – greater percentage (100%) get crystals or product

More relaxed atmosphere – less anxiety over performing the experiment

-better attention span to brief lab lecture

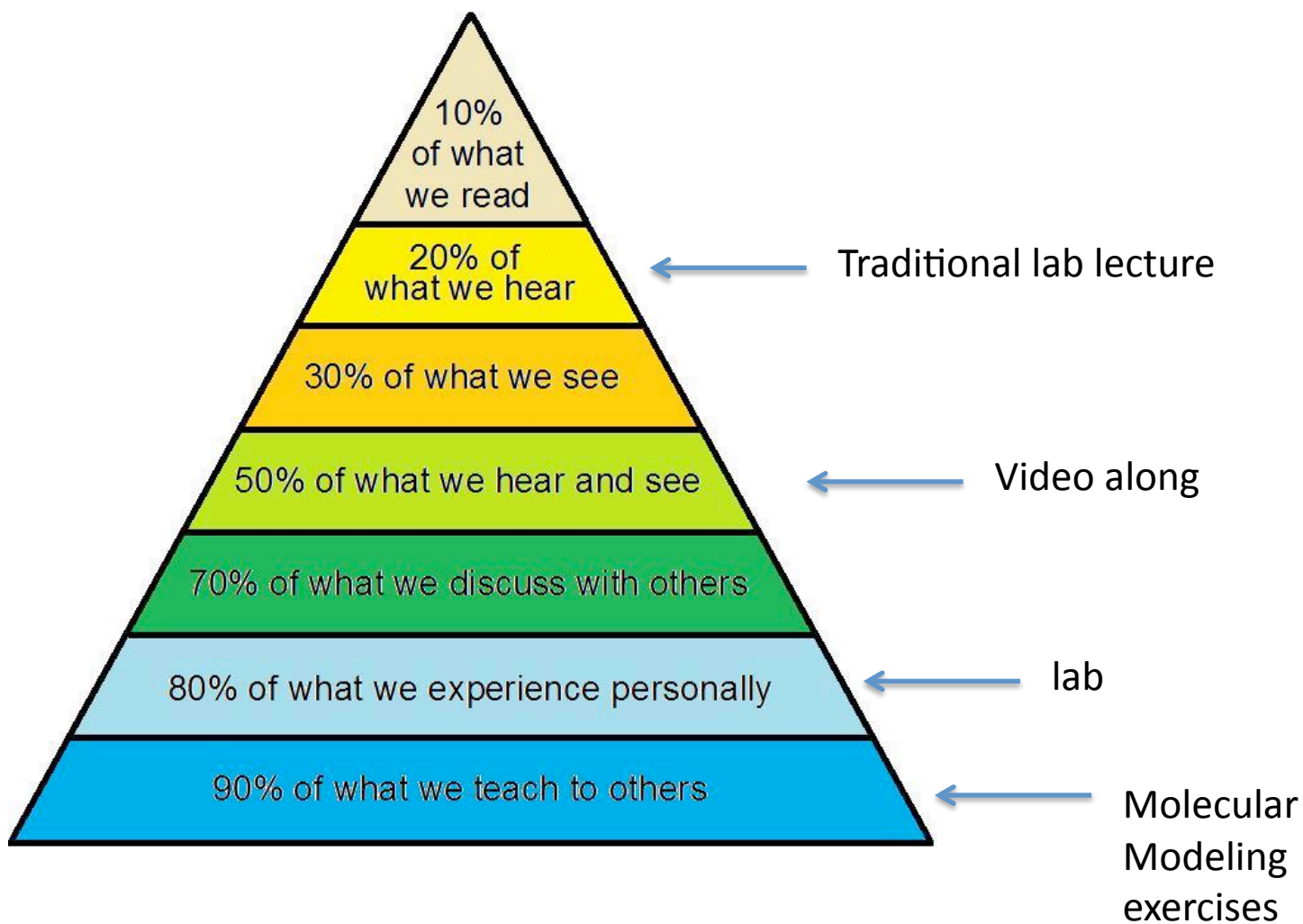
Students can re-watch lab video during lab to compare results

“My sample looks like this one on the video...”

Lab experiments are completed more efficiently: “extra time”

-able to assign molecular modeling exercises during lab

Learning Pyramid



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