

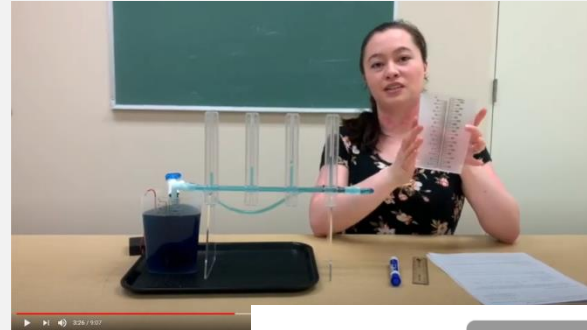
Virtual Implementations: Fluid Mechanics

Virtual IUSE EDUC-ATE Workshop

Oct. 2, 2020

Virtual Implementation Materials

- **Demo videos**
 - ~10 minutes long
 - Data collection
 - Some conceptual discussion
- **Conceptual Videos:**
 - ~2 minutes long
 - Focused on 1-2 learning objectives
- **Sample data:**
 - Data from demo videos; Excel spreadsheets



continuity

$$\dot{m}_{in} = \dot{m}_{out} = \dot{m}$$
$$\frac{\dot{m}}{\rho} = \dot{V}$$
$$\dot{V}_{in} = \dot{V}_{out} = \dot{V}$$
$$\dot{V} = v \cdot A_{\text{flow}}$$
$$\pi \frac{D^2}{4}$$

Recommended Implementation Protocols

Synchronous Implementation

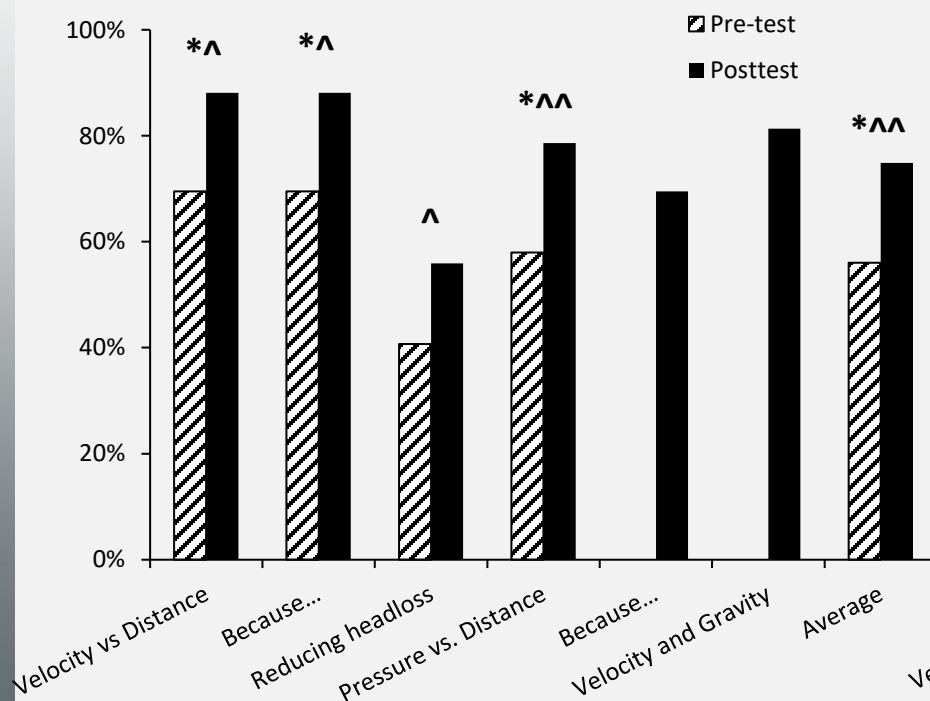
- Go over worksheets in class
- Show demo videos in class
- Show conceptual videos if time allows
- Pre-/posttests during class

Asynchronous Implementation

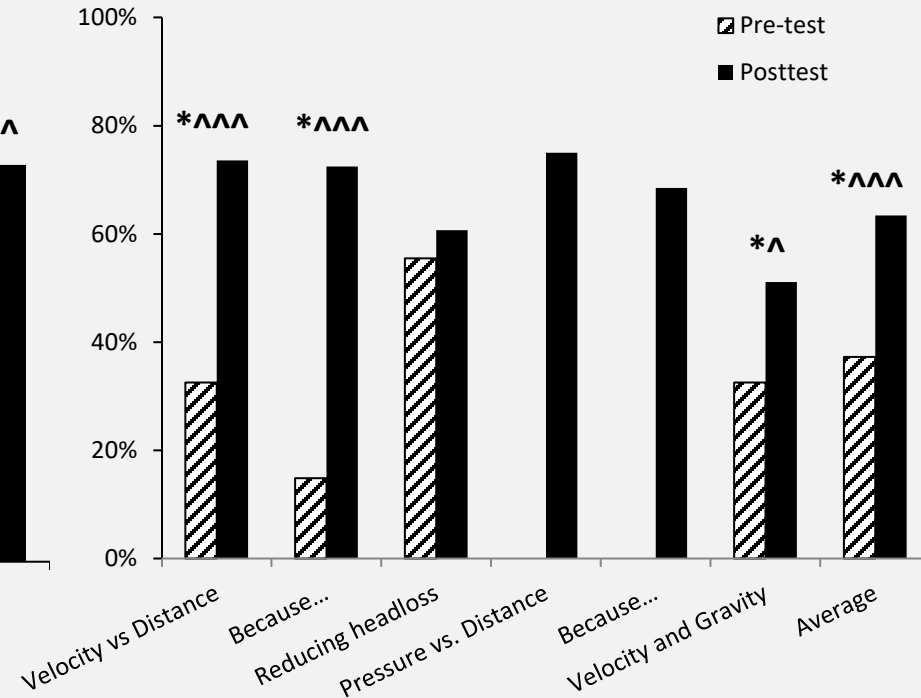
- Ask students to complete worksheets
- Give links to demo and conceptual videos
- Pre-/posttests as close together as possible

Virtual and Hands-on Both Effective

2020 Online Implementation



2019 Hands-on Average



* = $p < 0.05$; ^, ^^, ^^ = small, medium, large Cohen's D effect size

Breakout Room Session

- Find and watch demo video for hydraulic loss module at <https://labs.wsu.edu/educ-ate/>
- Discuss:
 - Are you teaching online classes?
 - Which implementation method (synchronous/ asynchronous) will you use?
 - Which materials do you think will be useful?