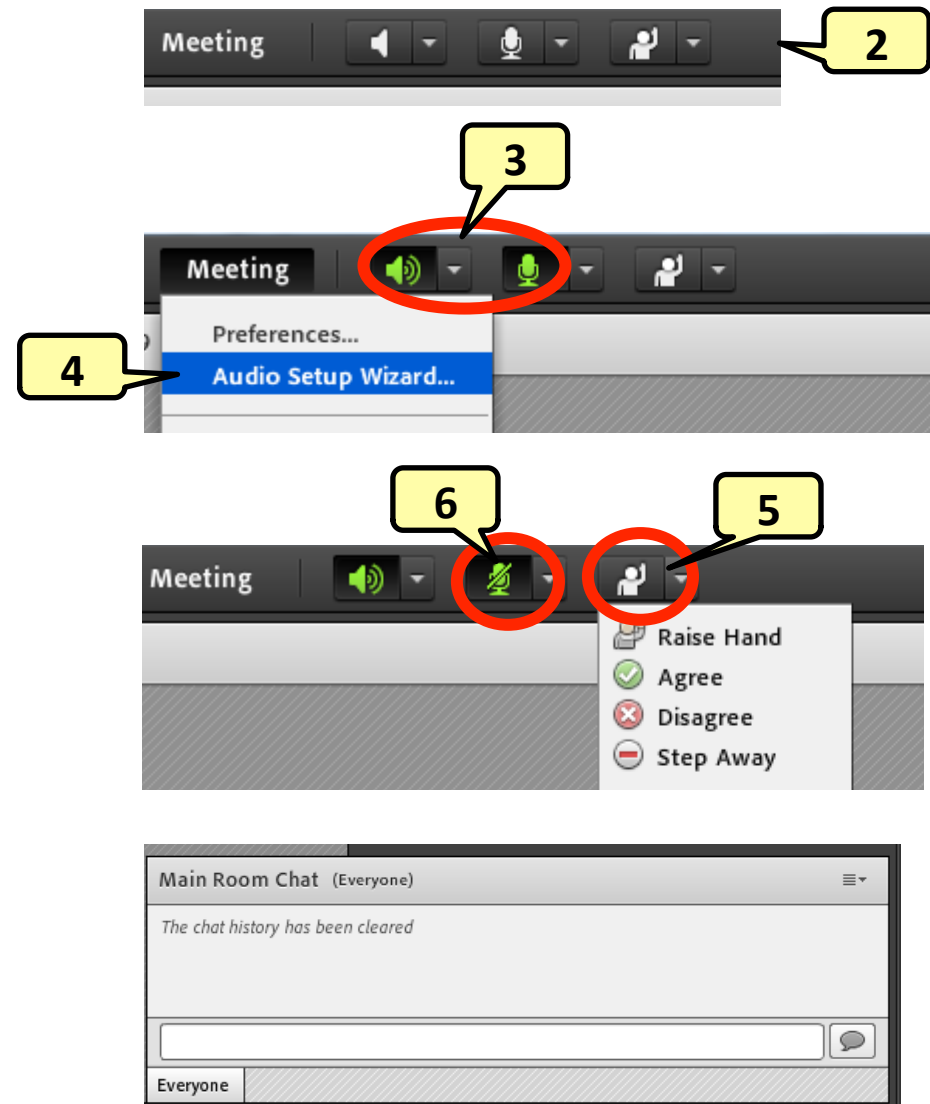


## Welcome! As you enter the room, please...

1. Plug in your headset (if available).
2. Familiarize yourself with the **top bar** on the screen
3. Make sure your **speakers and mic are enabled** (the icons on the top bar should be **highlighted in green**).
4. Run the **audio setup wizard** (this option is available from the “Meeting” menu on the left right of the screen).
5. Once you have run the wizard, “**raise your hand**” by clicking on the icon available on the top bar. This will indicate hosts you are ready to test your mic.
6. After testing your mic, **mute yourself** by clicking on the mic icon on the top bar (this will help to avoid background noise).

**Note:** Feel free to use the chat at any time!





# Record the Session



# Mechanics VCP Session 8

## August 15, 2013

STARTING THE SEMESTER AND  
PREPARATIONS FOR THE FALL

**Agenda:**

- (i) Review overall goals for the VCP**
- (ii) Discuss ties between Learning Objectives, Classroom Activities, and Assessment**
- (iii) Set goals for upcoming term**
- (iv) Describe how to implement and explain active learning strategies in your classroom**
- (v) Assignments for Session 9**

# Session 8 Learning Objectives

*Ed*

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- **At the end of this session, participants will be able to:**
  - *Create* a positive course climate through their actions and words on the first day of class and beyond
  - *Explain* their use of research-based strategies to their class and *earn the buy-in* of their students for these approaches and methods
  - *Apply* the ideas in the taxonomy to *create* both learning outcomes and learning activities that target specific locations in the cognitive-knowledge matrix
  - *Understand* the objectives, activities, and assessments of the VCP for the Fall

# Mechanics VCP Objectives

*Ed*

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- **The Mechanics VCP represents an experiment in creating a mutually-supportive community of passionate mechanics educators who can share ideas, techniques, and wisdom to improve the undergraduate education enterprise**
- **At the end of the Mechanics VCP, participants will be able to:**
  - *Articulate* the key features of learning taxonomies and *describe* specific approaches/tools/strategies that target activities at different levels of the taxonomies
  - *Identify* their students' motivations and *deploy* research-based teaching strategies that successfully tap into those motivations
  - *Align* course objectives, assessments, and instructional strategies to promote learning
  - *Integrate* specific research-based, active learning strategies into their own classes
  - *Create* new learning activities for their students that use techniques known to promote learning
  - *Cultivate* a welcoming classroom environment, an awareness of student learning differences, and a respect for student intellectual/social/emotional development
  - *Understand* the expectations of funding agencies and education journals for quality, depth, and breadth of educational research proposals and papers

# How Learning Works\*

*Ed*

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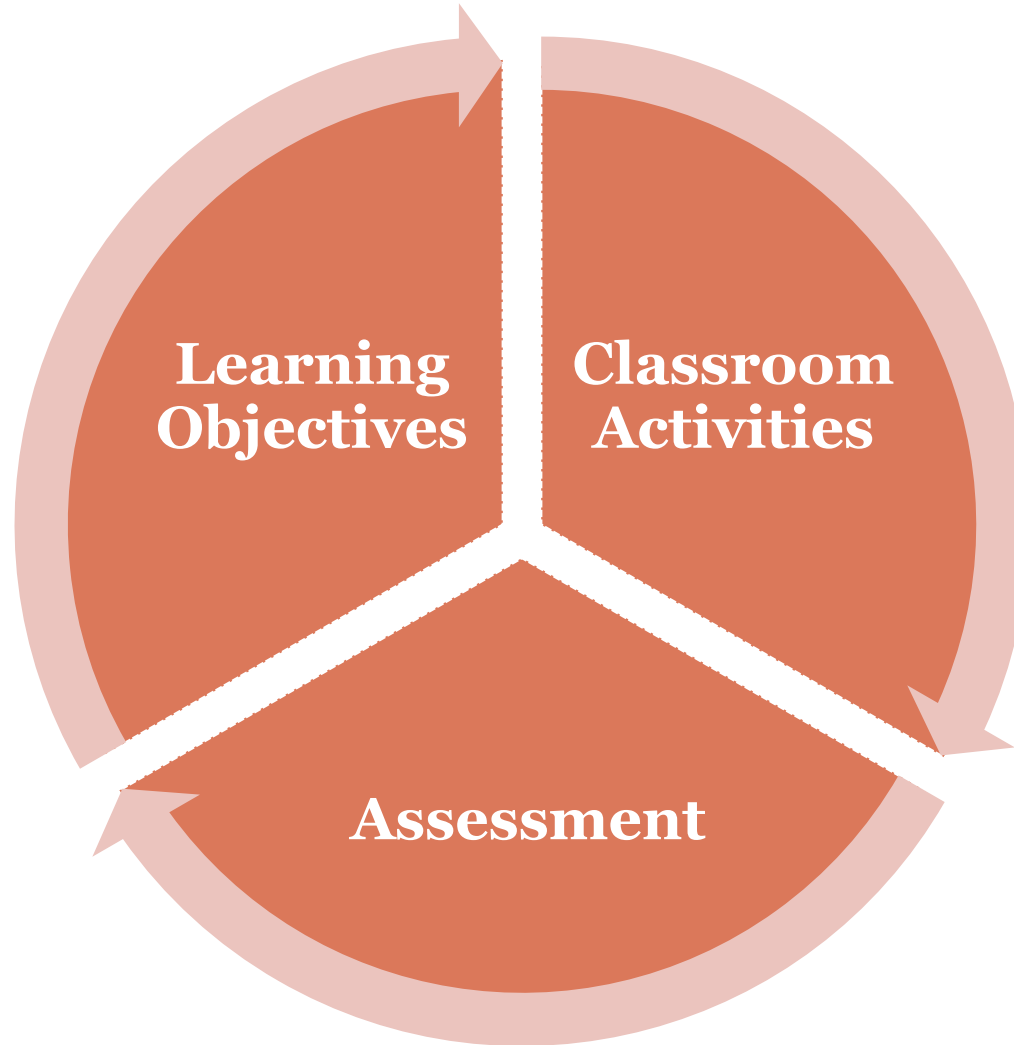
- 1. Students' prior knowledge can help or hinder learning**
- 2. How students organize knowledge influences how they learn and apply what they know**
- 3. Students' motivation determines, directs, and sustains what they do to learn**
- 4. To develop mastery, students must acquire component skills, practice integrating them, and know when to apply what they have learned**
- 5. Goal-directed practice coupled with targeted feedback enhances the quality of student' learning**
- 6. Students' current level of development interacts with the social, emotional, and intellectual climate of the course to impact learning**
- 7. To become self-directed learners, students must learn to monitor and adjust their approaches to learning**

\*Ambrose, Bridges, DiPietro, Lovett, and Norman, *How Learning Works* (2010)

# Course Alignment

*Ed*

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# Reintroduce yourselves

*Ed*

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- **Name and institution**
- **What are you teaching this term?**
- **What are you going to try to do differently in terms of research-based practices?**



# Classroom Environment

*Brian*

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- **Use early surveys to get to know students**
- **List expectations; establish and reinforce ground rules for interaction**
- **Be positive on the syllabus – no bold punitive statements, discussions of how difficult the class is, etc**
- **Make uncertainty safe**
- **Model inclusive language, behavior, and attitudes**

# Active Learning

Brian

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- **Explain what you are doing and why to your students (and **remind them** during the term)**
- **Start small, then add complexity**
- **Read up on what others are doing, discuss with the Mechanics VCP community**
- **Assess if things are working; ask students how think-pair-share, different projects, etc, could be improved**
  - Formal surveys
  - Raised hands in class
  - Clicker questions
  - Private conversations in office hours
  - Student advisory board

# An example narrative (active learning)

*Ed*

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- We're going to be using a technique in class called think-pair-share, and here's how it works (explain...)
- Research shows that techniques like these support student learning (cite some?)
- Think-pair-share focuses on your understanding of concepts, and it gives me quick feedback about your level of mastery
- It also engages you with your peers in great discussions about course concepts
- Think-pair-share activities fit into the broader context of problem solving and other activities we do in class (i.e., it's **part of your pedagogical “package”** or “system”; it's **not** an add-on just for fun)

# An example narrative (multimedia)

*Ed*

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- **You have access to multimedia resources through the class LMS**
- **Research shows that multimedia resources help students because they are always available, replayable, exact re-creations of the lecture or problem solving**
- **Here's how I suggest you use these videos:**
  - Watch them with friends, not alone; discuss the problem solving techniques shown in the video
  - Attempt the problem first, then consult the video when you need help with a specific detail
  - **DO NOT** passively watch a video from beginning to end without attempting to solve the problem yourself (you might trick yourself into thinking you have mastered the problem by **watching**, rather than by **doing**)
  - Use the problem solving approach (format, coordinate system, nomenclature, etc.) as a template for every problem you do, and as a model for what good problem-solving form looks like

# An example narrative (**NOT** to use)

*Ed*

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- **This semester, we're going to be using this bit of technology because it's really shiny and new**
- **It's so neat-o that I just had to try it in class**
- **I'm not sure what value it will add, but it looks like fun**
- **There's no/little/scarce research basis for using this tool, but we're using it anyway**
- **Examples: only use something like Facebook or Twitter if you have (i) a clear purpose, and (ii) some intuition or evidence that the same purpose cannot be achieved as effectively in any other way**

# Active Learning

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*Brian*

**“The core elements of Active Learning are student activity and engagement in the learning process.” – *Prof. Michael Prince***



Brian



**University class in 1350 - Laurentius de Voltolina**

# Chinese Proverb

*Brian*

**Tell me and I'll forget;  
show me and I may remember;  
involve me and I'll understand.**



**EXAM**



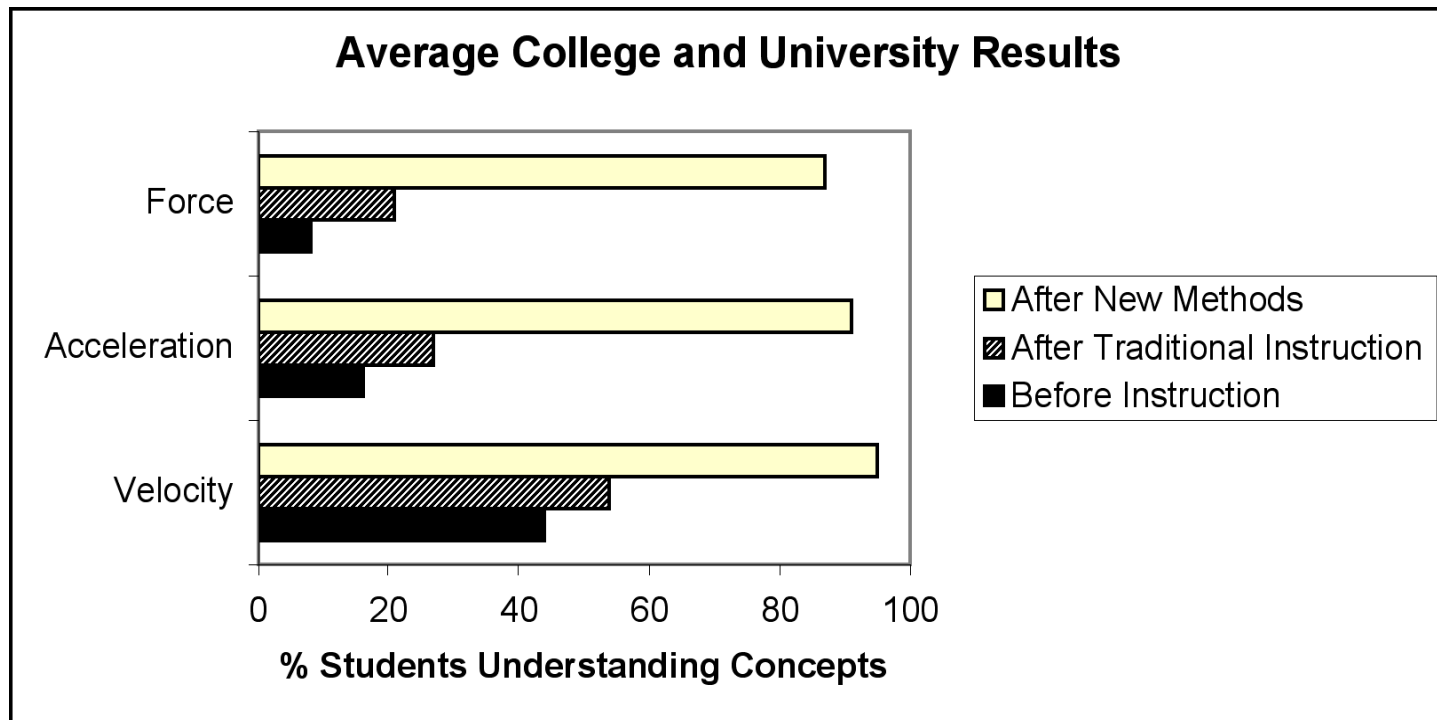


# Your Learning....

Brian

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- **My sections do as well (and generally a little better) on the common final than other sections.**
- **Conceptual understanding improves drastically.**



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**What else do some of you do to  
explaining active learning to  
your students?**

# Our Fall Work

*Ed*

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- **Based upon your survey responses, we will form two working groups:**
  - **Concept question repository:** a collection of shared concept questions suitable for use as “clicker” questions in mechanics courses
  - **Flipping the classroom:** a group engaged in creating sharable multimedia materials for mechanics courses
- **You can join one group, both, or neither (although it might be hard to maintain connection to the larger group without joining either working group)**
- **Brian and Ed will help support the groups and participate in both, but we expect **one of you to volunteer to lead** these groups**

# Moving forward

*Ed*

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**Questions, concerns, anxieties,  
discussion points?**

# Question Stem

- a) Alternative 1**
- b) Alternative 2**
- c) Alternative 3**
- d) Alternative 4**

Let's try to title the questions sequentially in the folder as they are posted on the Dropbox, along with author's last name and topic. For example, as you post one, it might be 1- Self-RB kinematics. The next one could be 2- Dannenhoffer-RB WE, etc.

**Name of Submitter, Date**

# Background

*Brian*

- 1. What concept (or misconception) are you addressing in your question?**
- 2. What are some troubles that learners have with this concept?**
- 3. List any citations to relevant work (if any) [optional, but helpful]**

# Comments on this question

*Brian*

## 1. Here is a suggestion that might make the problem more clear for students

a. I suggest rewording Alternative 1 to read .... (left by Sir Isaac Newton)

## 2. Questions about the concept question

a. Do you need to state that the pulley is massless? (left by Euler)

## 3. Other comments

a. We could combine this question with Question 1-Self-RB WE

# For MVP Session 9 (date TBD)

*Ed*

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- **Teach your class(es), and be ready to update everyone on your innovations and their success**
- **Compose a list of questions or concerns (if any) that develop as you implement research-based strategies in your class(es)**
- **Select your working group(s)**
- **Begin to engage with those working group(s)**
- **Contribute something substantive to those working group(s)**
- **Be ready to describe your contributions to the working group(s)**