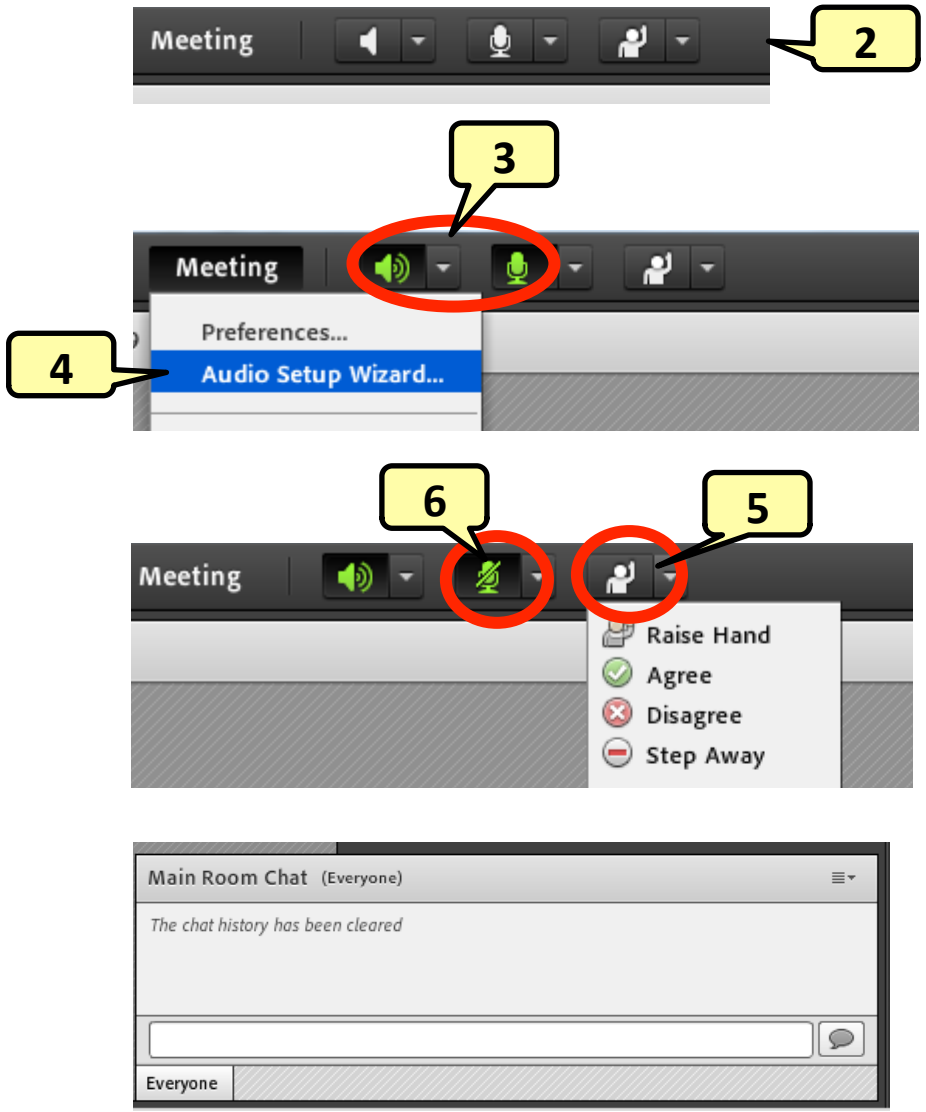
Welcome! As you enter the room, please…

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!



Mechanics VCP Session 1
April 4, 2013

UNDERSTANDING STUDENT MOTIVATION AND ENGAGEMENT IN THE CLASSROOM

<u>Agenda</u>:
(i) Mechanics VCP learning objectives
(ii)Objectives for today's session
(iii)Quick technology shakedown
(iv)Overview of the How Learning Works (HLW) framework
(v)Promoting a positive classroom climate
(vi)Structuring learning to mesh with student motivation
(vii)Foreshadowing: learning taxonomies (Session 2)

Session 1 Learning Objectives

Ed

- **At the end of this session, participants will be able to:**
  - **understand the goals of the overall Mechanics VCP experience**
  - **agree to the expectations of all participants**
  - **summarize the 7 How Learning Works principles**
  - **deconstruct how a classroom environment can promote or diminish learning**
  - **provide a classroom environment that encourages student motivation**

Mechanics VCP Objectives

Ed

- **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**

MVCP Participant Expectations

Ed

- **Mechanics VCP participants, including the hosts, will:**
  - ***attend*** **each VCP session and actively contribute to the discussion**
  - ***read and reflect*** **on all assigned material**
  - ***set aside*** **the chaos of daily faculty life and *present* our best selves to the group**
  - ***interact*** **via the OpenAtrium portal in between VCP sessions as requested by the leaders**
  - ***engage*** **the material and the group with *energy* and *curiosity*, *respect* for each other and our ideas, and *patience* in the face of the possible (inevitable?) technology hurdles**

Technology Shakedown

Ed

- **Let's start with audio settings**
- **Now audience response functions…who can raise their hand?**
- **Now the chat window…feel free to type a message (that's sent to the whole group!); private chats are possible too**
- **In a few minutes, a poll**
- **And then breakout rooms and the functionality therein**
  - **Exercise: ~4-5 people per breakout room, 5 minutes total to discuss the results of the poll we'll take**
  - **One participant set the timer to 5 minutes**
  - **Hosts insert message when 1 minute remains**
  - **Hosts go into some breakout rooms to listen in and answer any questions**

Outcomes of the VCP General Pre-Survey

Ed

- **This survey was given to ALL VCP participants (mechanics, thermo, others…)**
- **Generally, participants are interested in:**
  - **active learning strategies**
  - **assessment techniques**
  - **identifying and articulating desired course outcomes**
  - **aligning objectives, activities (pedagogies), and assessment**

Introductions

Ed Berger

University of Virginia

Brian Self

Cal Poly, San Luis Obispo

Introductions

Pedro Franco Silva

Mousa Gargari

University of Cincinnati

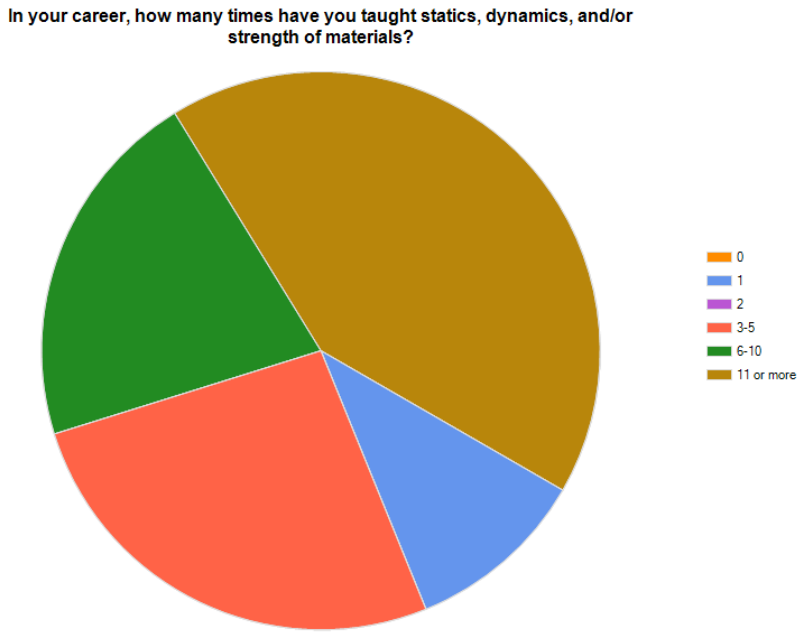
Amelito Enriquez

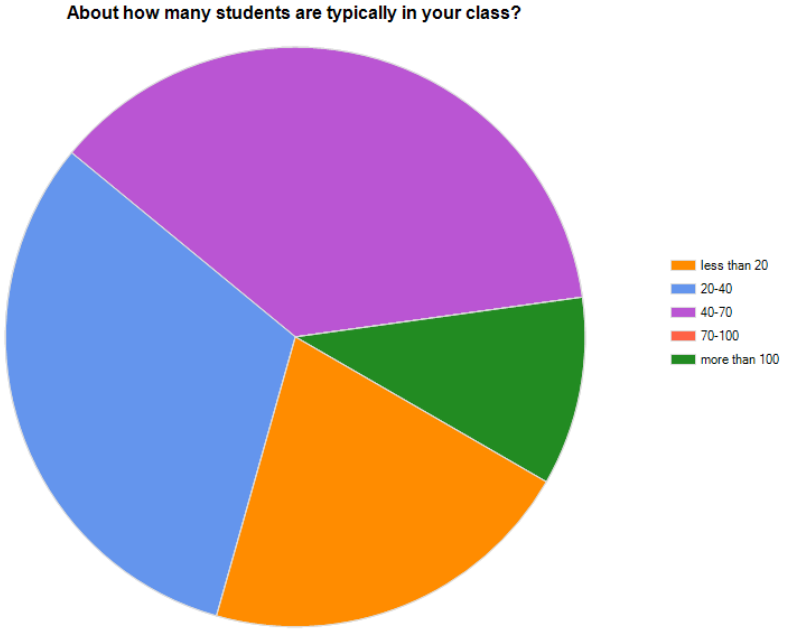
Cañada

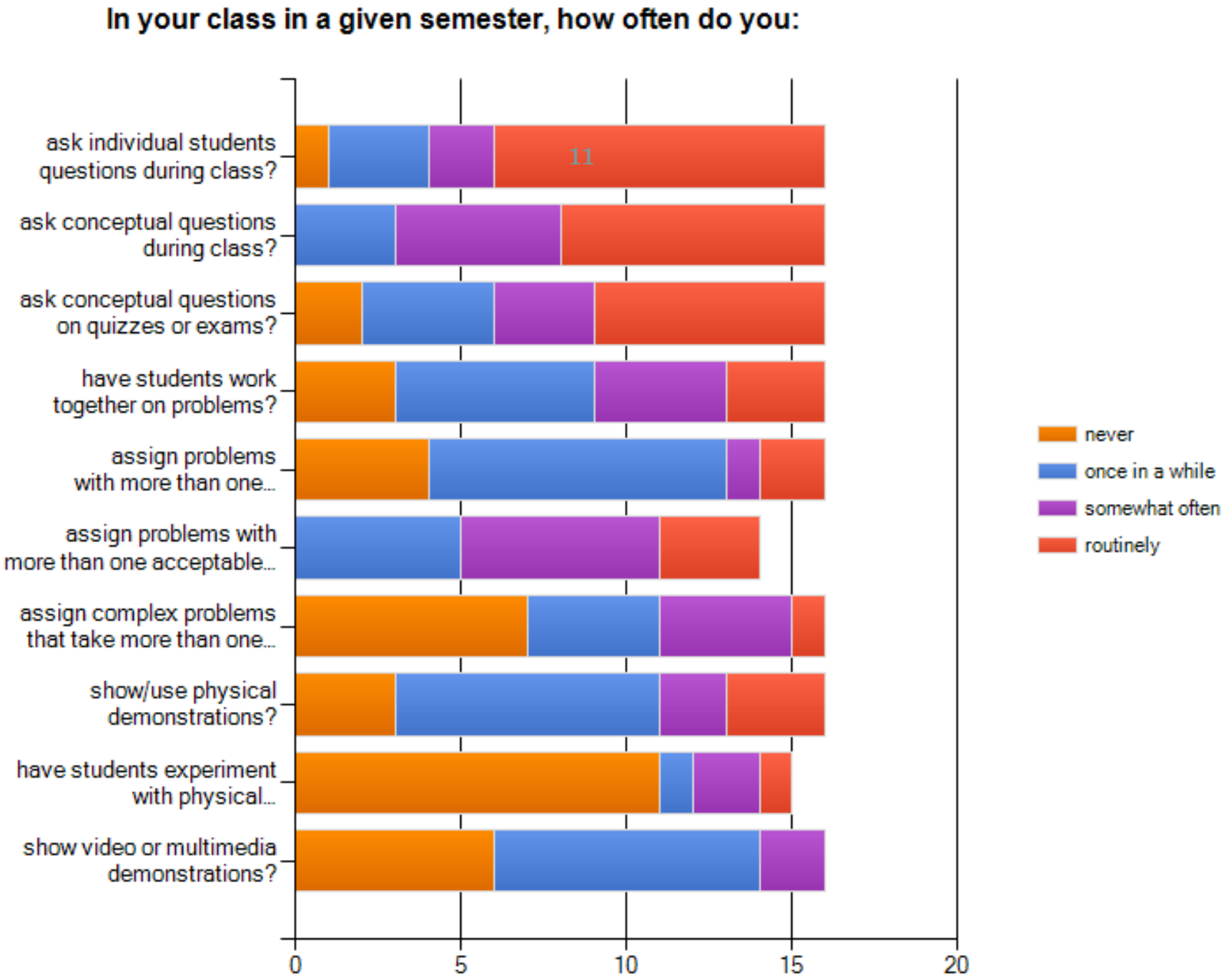
Sarah Vigmostad

The University of Iowa

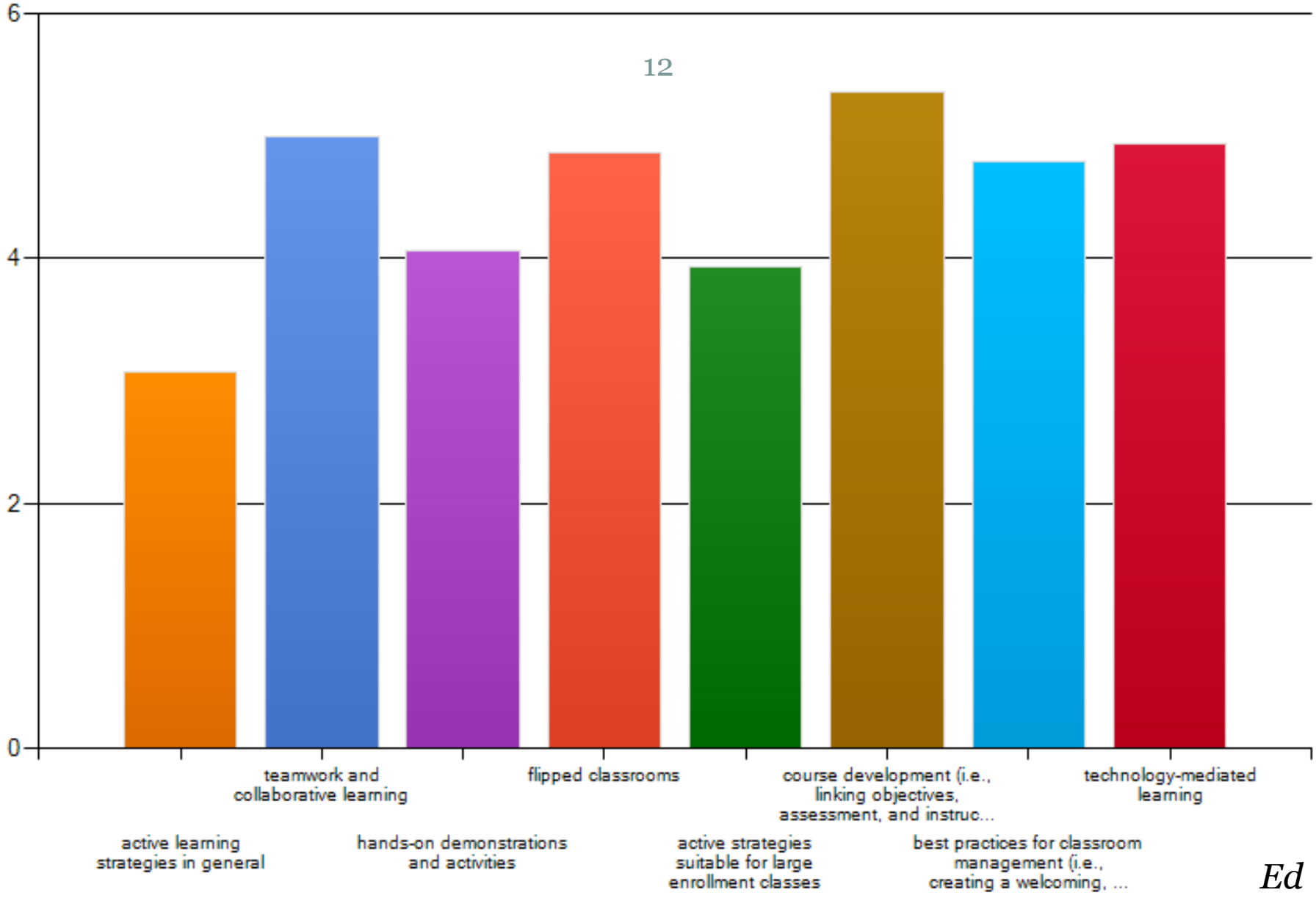
Mechanics VCP Pre-Survey





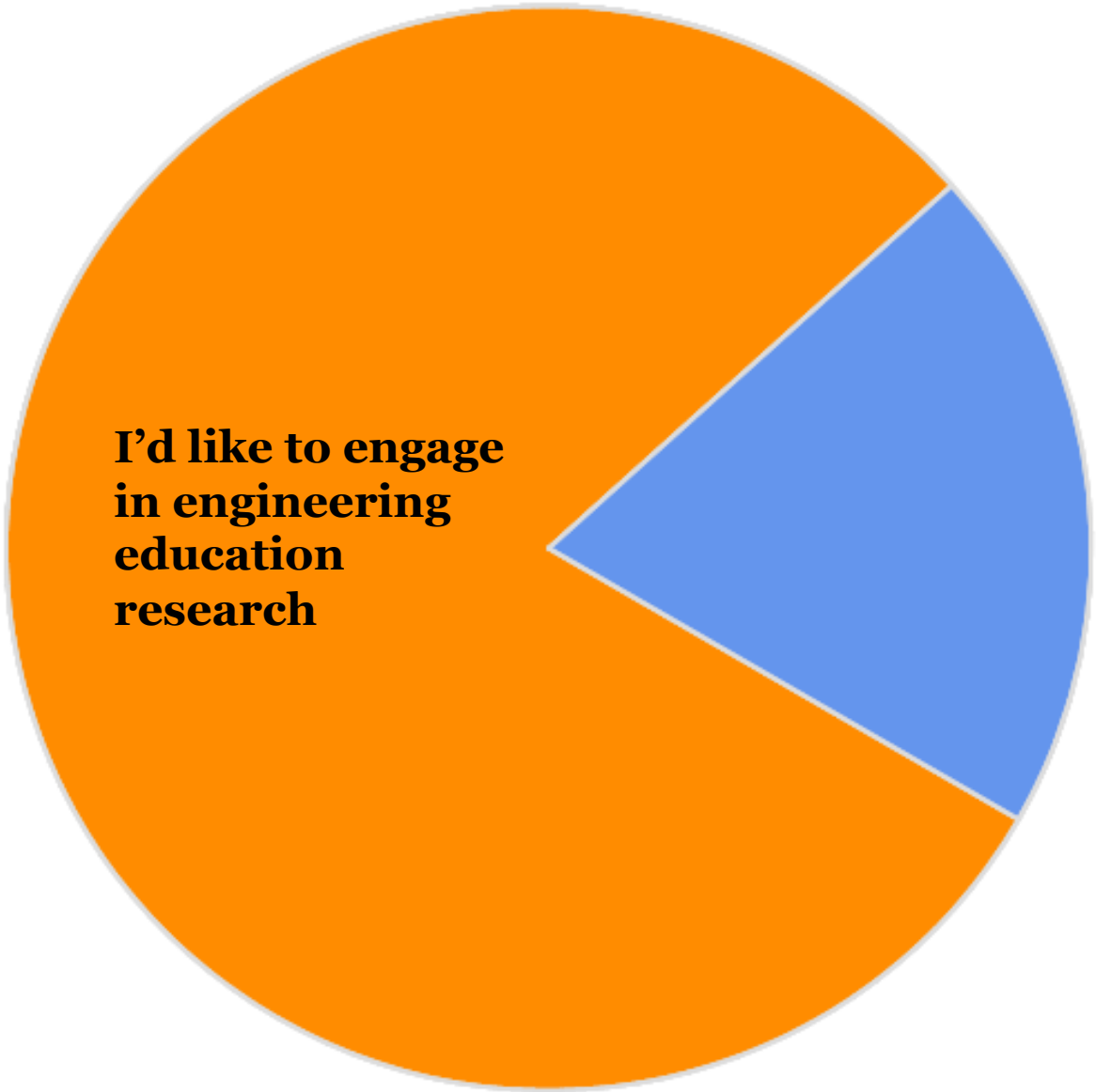

In your class in a given semester, how often do you:
ask individual students questions during class?
ask conceptual questions during class?
ask conceptual questions on quizzes or exams?
have students work together on problems?
assign problems with more than one...
assign problems with more than one acceptable...
assign complex problems that take more than one...
show/use physical demonstrations?
have students experiment with physical...
show video or multimedia demonstrations?
11
0
5
10
15
20
never
once in a while
somewhat often
routinely

We will do our best to cover topics of specific interest to you. Please rank the topics below in order from your highest interest (#1) to your lowest interest.



Ed

Are you interested in doing engineering education research? Or are you more interested in using research-based instructional approaches, without being an education researcher yourself?



M

Ed

How Learning Works*

Ed

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)

How We Will Use HLW

Ed

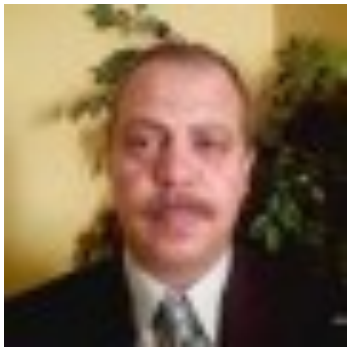
- **The HLW framework is a very useful tool to characterize the specific actions students and instructors can take to promote learning**
- **We will use HLW to inspire some of what we do in this VCP**
- **You do NOT (!) need to purchase this book to participate in the VCP**
- **It is nonetheless a useful reference and we can certainly recommend it for your bookshelf**

Introductions

Richard Hill

University of Detroit Mercy

Taher Abu-Lebdeh



North Carolina A&T State University

Anna Howard

The University of Iowa

Joan Dannenhoffer

Newbolds

Creating positive course climate

Brian

- **What do you do on the first day? Click on all that apply**
  - Ice breaker with students
  - Go over syllabus
  - Begin with course content
  - Give a concept inventory
- **Breakout rooms: discuss and list things that you do on the first day**
  - 2nd person on the breakout list takes notes
  - 3rd person will report out

Some examples…

Brian

- **Early surveys to get to know students**
- **Expectations listed (similar to what we did on the syllabus)**
- **Try to be positive on the syllabus – no bold punitive statements, discussions of how difficult the class is, etc,**

Development, course climate, and learning

Brian

- Students' current level of **development** interacts with the **social, emotional, and intellectual climate** of the course to impact learning
- Pedagogy should consider holistic student development
  - Intellectual and social identity development
- Course climate issues also important
  - Stereotypes
  - Tone
  - Faculty-student and student-student interactions
  - Course content

Inclusivity, Low-Threat Environment

Brian

- **Social and emotional gains are larger than intellectual gains in college**
- **"Student-centered teaching requires us to teach students, not content"**

- **Inclusivity: avoid micro-inequities and tokenism. Use diversity of examples.**

Breakout Rooms

Brian

- **What do you do that you think helps to promote a positive course climate?**

- **In breakout rooms, come up with a list of things you do to encourage a positive climate**
- **3rd person on breakout room list is recorder (take notes on the notepad)**
- **4th person on list will report out**

Instructional strategies from the research

Brian

- **Make uncertainty safe**
- **Examine your assumptions about students**
- **Model inclusive language, behavior, and attitudes**
- **Establish and reinforce ground rules for interaction**
- **Use the syllabus and first day of class to establish the course climate**

Chickering Model of Student Development

Brian

- **Developing competence**
  - **Intellectual, physical, interpersonal**
- **Managing emotions (express appropriately)**
- **Developing autonomy (final goal is interdependence)**
- **Establishing identity**
- **Freeing interpersonal relationships**
- **Developing purpose ("who am I going to be?)**
- **Developing integrity (self interest vs social responsibility)**

Perry's Model of Intellectual Development

Brian

- **Duality – right and wrong answers, knowledge is absolute**
- **Multiplicity – matter of opinion, evaluation is purely subjective**
- **Relativism – opinions are not all equal, hone your intellectual and critical skills**
- **Commitment – choose a theory or approach over another**

Increasing Student Motivation*

Brian

- **Choose knowledge and skills that are worth learning**
- **Pitch the tasks you set for your students just beyond their base capability but well within their reach & expect them to succeed**
- **Make the classroom a safe place to take the risks involved in learning by the way you treat students' attempts to learn**
- **Encourage the building of a community of learners in your class, where everyone supports others' attempt to learn**
- **Give the learners some choices in what or the way they learn**
- **Be a good model of a mastery-oriented learner**
- **Accept the fact that yours is not the only or even the most important venue in which your students function**

Svinicki, M. D., (2005). *Student goal orientation, motivation, and learning*. (Idea Paper #41). Manhattan, KS, The IDEA Center.

Breakout Rooms

Brian

- **What have you done in your class that you think motivates students?**

- **In breakout rooms, come up with a list of things you do to motivate students**
- **1st person on breakout room list is recorder (take notes on the whiteboard)**
- **4th person on list will report out**

Learning Taxonomies

Ed

- **It is helpful to consider many of the HLW principles, as a whole, in a unified expression of what we ask students to do and what actions we take to promote learning**
- **One way to view this set of actions is via a *learning taxonomy***
- **The best-known is Bloom's taxonomy (updated in 2001), which we will talk about in depth in Session 2 (April 11)**
- **For now, simply consider…**

Taxonomies

- **Principle 4: to develop mastery, students must *acquire* component skills, practice *integrating* them, and *know when* to apply what they have learned**
  - **"acquire" component skills**
  - **"integrate" them**
  - **"know" when to apply them**

- **These verbs describe different levels of cognitive engagement, as we will see next time**

For Session 2 (April 11, 2013)

- **Update your user profile (with a picture!)**
- **Review articles in Atrium folder**
  - **Creating class climate (Session 1 Reading folder)**
  - **Motivation (Session 1 Reading folder)**
  - **Bloom's Taxonomy (Session 2 Reading folder)**
- **Connect with our community on the blog**
- **Using Bloom's verbs, upload examples of:**
  - **Course learning objectives**
  - **Sample lesson objectives**
  - **Upload these to the folder:**

  Mechanics VCP Session 2>Sample Objectives (Using Bloom Verbs)