



Carl Wieman Science Education Initiative
at the University of British Columbia

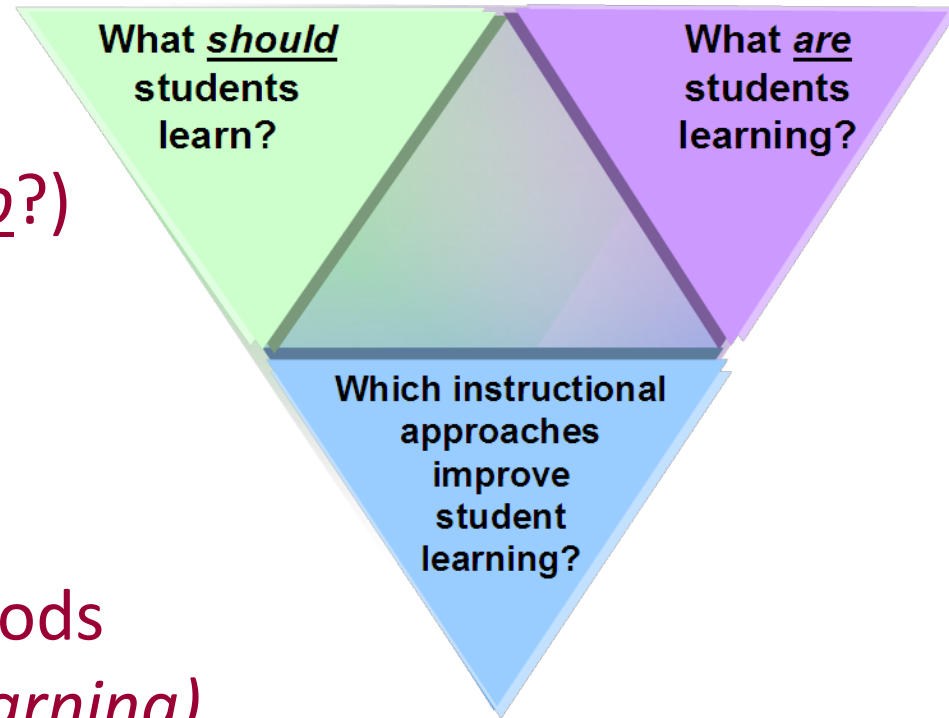
2012-13 End of Year Overview

CWSEI Goals

1st: Learning goals. (what should students be able to do?)

2nd: Good assessment
(validated tests)

3rd: Improved teaching methods
(*research based, improve learning*)



Carl Wieman Science Education Initiative

6 years in \Rightarrow department-wide improvement in science education at UBC

CWSEI Programs at various scales and stages:

Large & mature:

Earth, Ocean & Atmospheric Sciences
Physics & Astronomy

Large and young:

Mathematics
Computer Science
Life Sciences

Smaller – **Chemistry, Statistics**

SEE POSTERS- here a few highlights

Chemistry

STLF Kerry Knox, Dept Director Jackie Stewart

Ramping up! One STLF hired, another to start soon

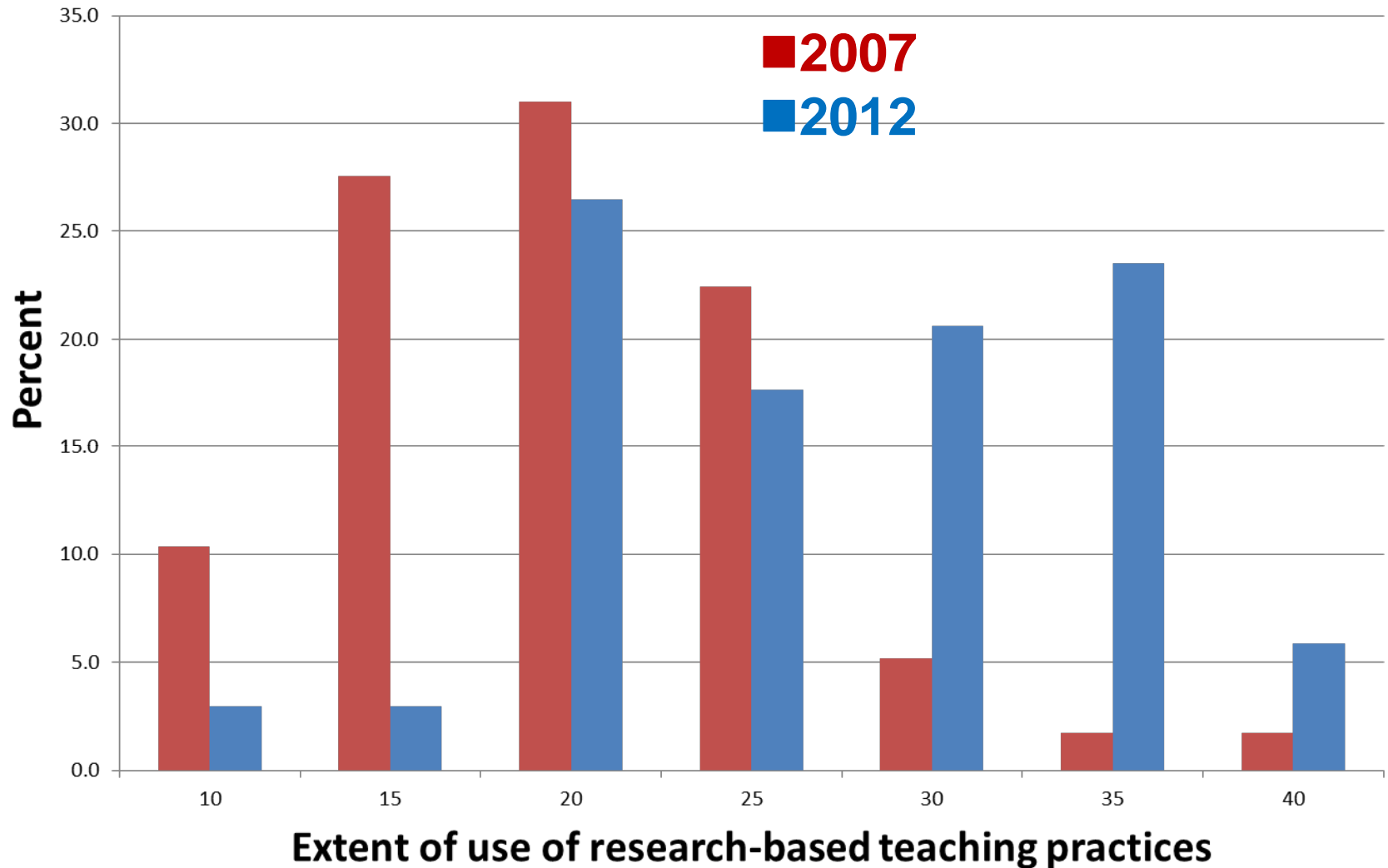
Computer Science

STLFs (part time): Donald Acton, Ed Knorr, Steve Wolfman

Dept. Director: Ian Mitchell

New STLF model - Tenured teaching faculty members as part-time STLFs

EOAS Teaching Practices

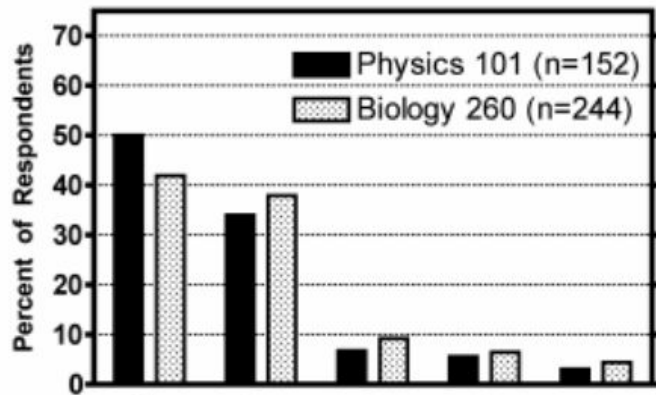


Some interesting results from CWSEI folks (to be pub.)

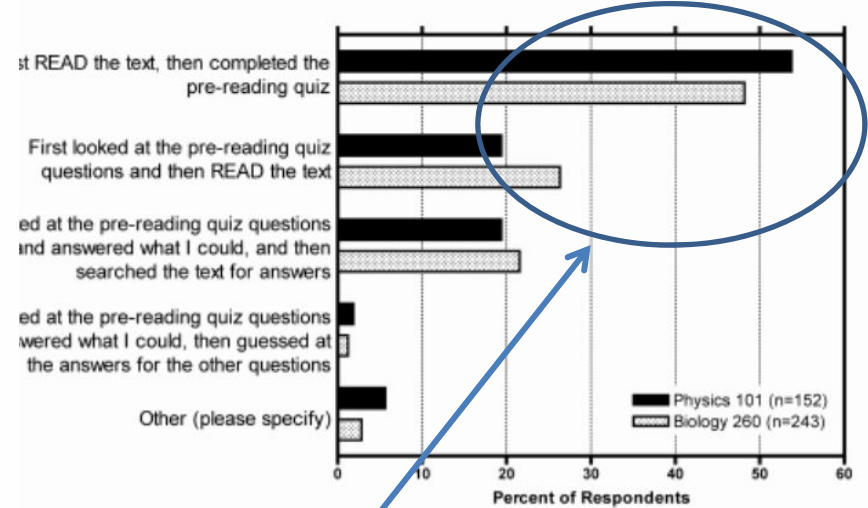
Targeted pre-class reading (Cynthia Heiner and Mandy Banet)

- clever way to confirm student reporting quite accurate
- 80% of students each week did the reading, & in productive manner
- 80% agreed was helpful to their learning, ~ 4% disagreed
- Same for biology and physics classes

I READ the assigned pre-reading sections:



When I did the pre-reading assignment, I usually:

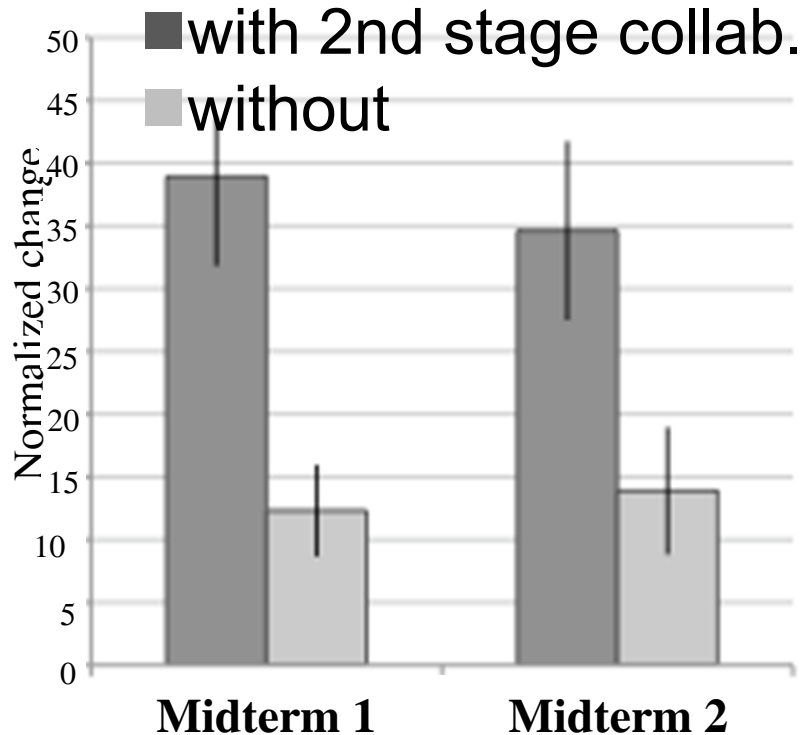


“good” reading

Learning in two-stage exam

(Brett Gilley, Bridgette Clarkson)

- 2nd stage results in learning >40% of what did not know.
- Same across entire distribution (low to high)



improvement of individuals
when measured later

Student views of 2 stage exams

C. Heiner and G. Reiger

- overwhelmingly like (87% felt should be used on midterms)
- primary reason was because of learning
- productive collaboration during second stage

Large survey of US university physics faculty members
(Henderson, Dancy, and Niewiadomska-Bugaj, PRST-PER, 8, 020104 (2012))

1/3 of those trying research-based teaching methods (RBTM) later quit.

UBC faculty members that tried RBTM with CWSEI support and have had ≥ 1 year to quit—
1 out of 70!

Of the faculty members in EOAS & PHAS who adopted RBTM more than a year ago

At least 44 (>80%) have carried on into 2nd course with no (or very little) STLF help.

Sustainable growing improvements in teaching



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2012-13 End of Year Event

Morning Session 9:30-noon

◆ **Carl Wieman:**

Teaching that takes advantage of your science expertise
Overview of CWSEI activities

◆ **Jackie Stewart:**

Some Surprising Results from Research on Learning

◆ **Natasha Holmes:**

New Roles of Teaching Assistants

◆ **Teaching Assistants Panel Discussion**

12-12:30pm, ESB Atrium – Food & Conversation

Poster session 12:30-2:30pm ESB Atrium

Details on what's happening