

Out-of-Class Screencasts to Enhance In-Class Learning

Philip J. Parker, Ph.D., P.E.

Professor, Civil and Environmental
Engineering



UNIVERSITY OF WISCONSIN
PLATTEVILLE

Presentation Overview

- Cost/Benefit analysis
- Active learning review
- Cost/Benefit of active learning
- Case Study



Cost/Benefit Analysis



Lots of Questions...!
Frustrates some students
Less time to lecture (?)
Time to learn software
Time to write questions

Benefits



Costs

Active Learning Review

“...it would be difficult to design an educational model that is more at odds with current research on human cognition than the one that is used in most colleges and universities”
(Halpern & Hakel, 2002).



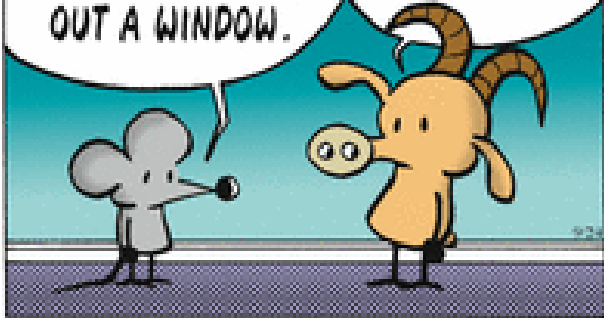
Methods

- Bookend lectures
- Brainstorm
- Clickers
- Cooperative/collaborative learning
- Debates
- Demonstrations
- Directed questioning
- Discussions integrated into the lecture
- Guided lecture
- Hands-on activities
- In-class problem-solving (by students, not by a faculty member at the front of the room)
- Informal cooperative learning
- Jigsaw procedure
- Pause
 - Students can compare notes
 - Discuss “muddiest point”
 - Summarize the key ideas
- Brief, ungraded writing exercise followed by discussion
- Peer-teaching
- Problem-based learning/Project-based learning
- Role-playing
- Socratic questioning
- Think/Pair/Share

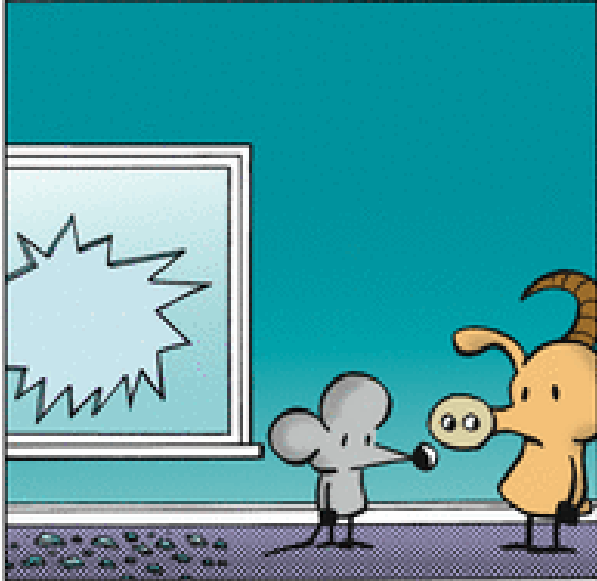


I'M EXPANDING PIG'S VOCABULARY. TODAY'S WORD WAS 'DEFENESTRATION,' WHICH MEANS THE ACT OF THROWING SOMEONE OUT A WINDOW.

THAT'S GREAT. WHAT HAVE YOU FOUND IS THE BEST WAY OF TEACHING NEW WORDS?

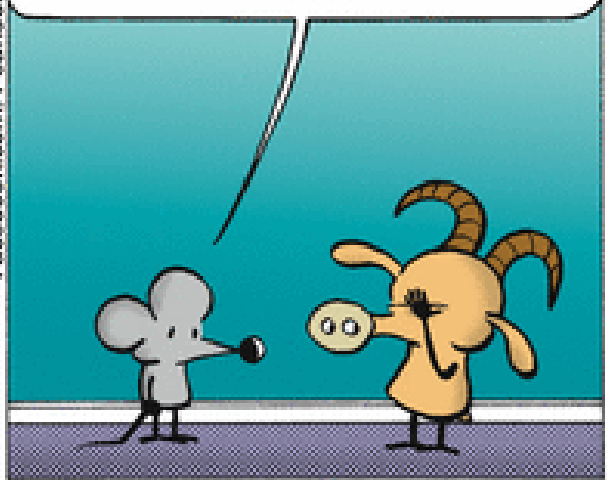


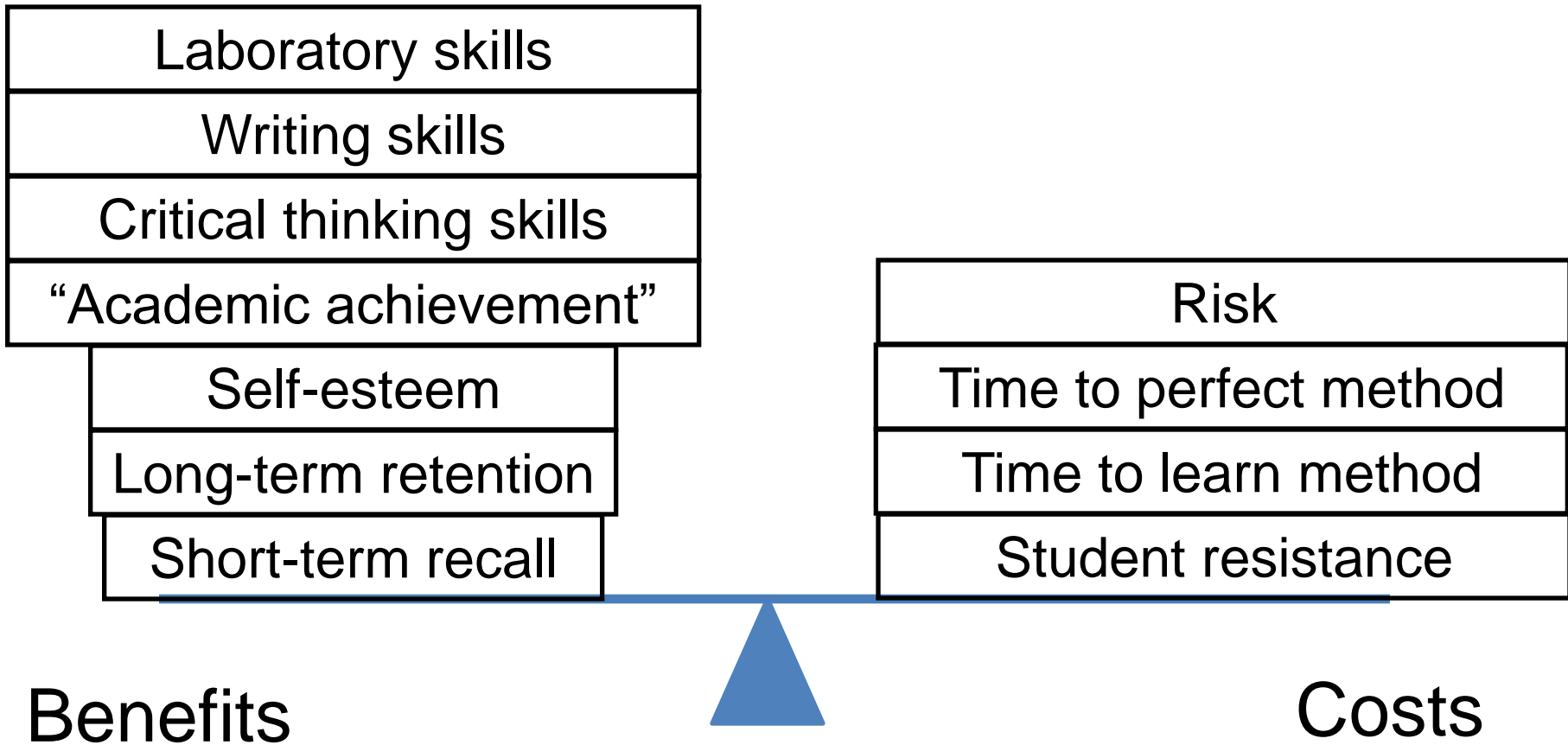
© 2012 Stephan Freris / Drawn by Universal Uclick



Facebook.com/PearlsComic

LEARNING CAN BE A PAINFUL PROCESS.





Case Study

- CIVILENG 3340 – Introduction to Environmental Engineering
- Required of all civil engineering and environmental engineering students
- ~30 – 36 enrollment
- Problem-solving using math and science
- In STEM fields, students crave worked examples
 - Cost:benefit analysis





A diagram of a balance scale. A horizontal blue line represents the beam, supported by a blue triangular fulcrum in the center. The word "Benefits" is written in black text on the left side of the beam, and the word "Costs" is written in black text on the right side of the beam.

Benefits

Costs

Statement of the Problem

How can I take advantage of the benefits of working examples without taking up class time to do so?

Answer: Screencasts

- [Example #1](#)



Solution

- Screencasts using Camtasia
- Simple equipment
 - Headset and Camtasia software
 - PowerPoint OR
 - Scanner OR
 - Tablet PC
- Fall 2011 – created screencasts of worked example problems



Example

Example #2

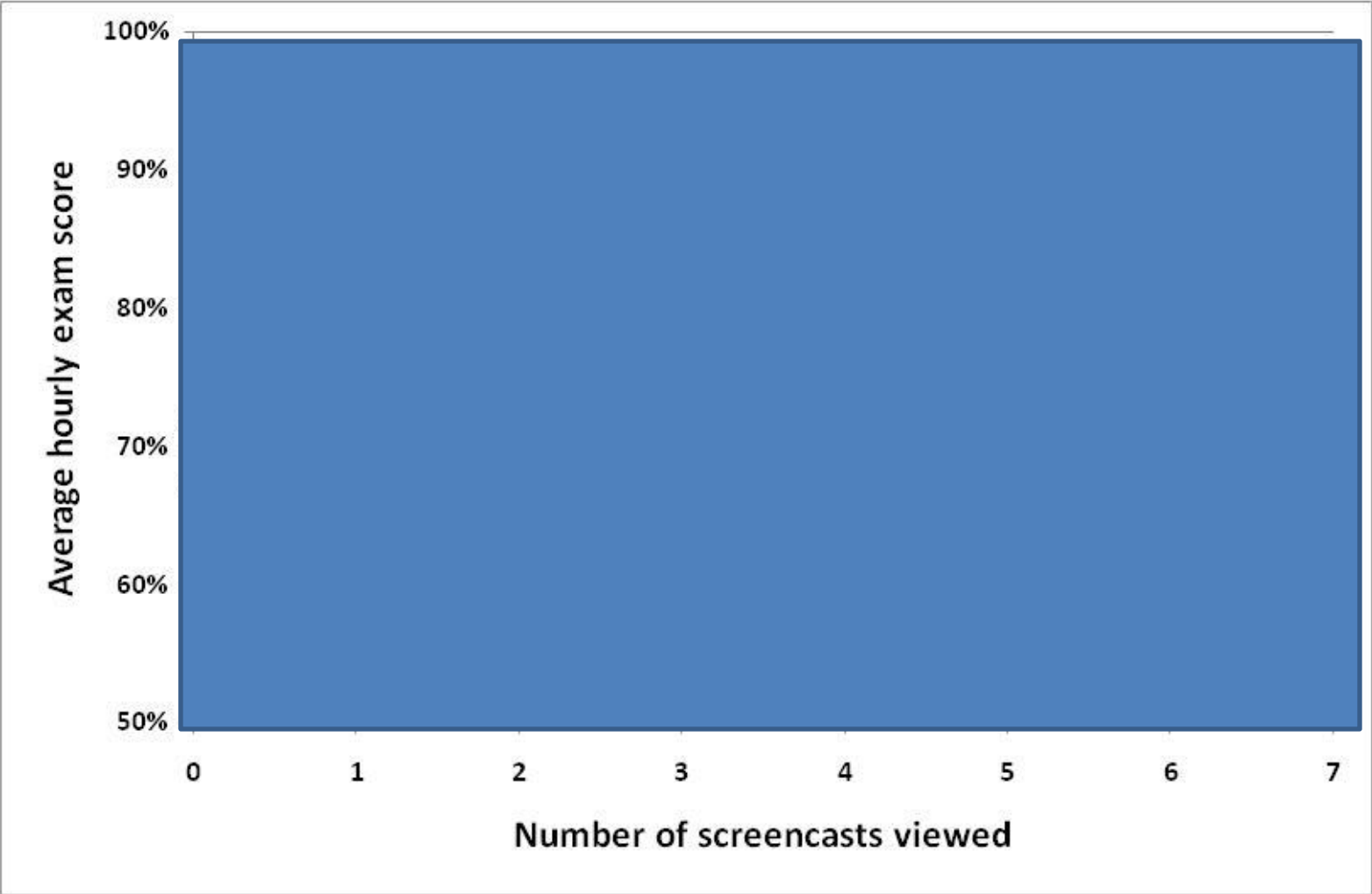
Low standards...

Assessment

- Not very much work for me

Screencast Title	Number of Users Visited
1. Population Growth	27
2. Alkalinity and hardness calculations	24
3. Equilibrium constants – ICE charts	29
4. Henry's Law	22
5. PFR/CMFR combination	18
6. D.O. sag	26
7. Sludge Dewatering	22





	Strongly Disagree	Disagree	Agree	Strongly Agree
I thought the screencasts were helpful	1	0	10	17
I wish there were more screencasts	1	1	13	12



Other Observations/Future Directions

- Screencasts should be short
- Student comment: I would like “...problems more related to the actual homework and expected exam questions.”
- Make the screencasts themselves more “active”
- They work great for software tutorials



Questions?



parkerp@uwplatt.edu