

Frustrations from Technologies - Is It Worth It?

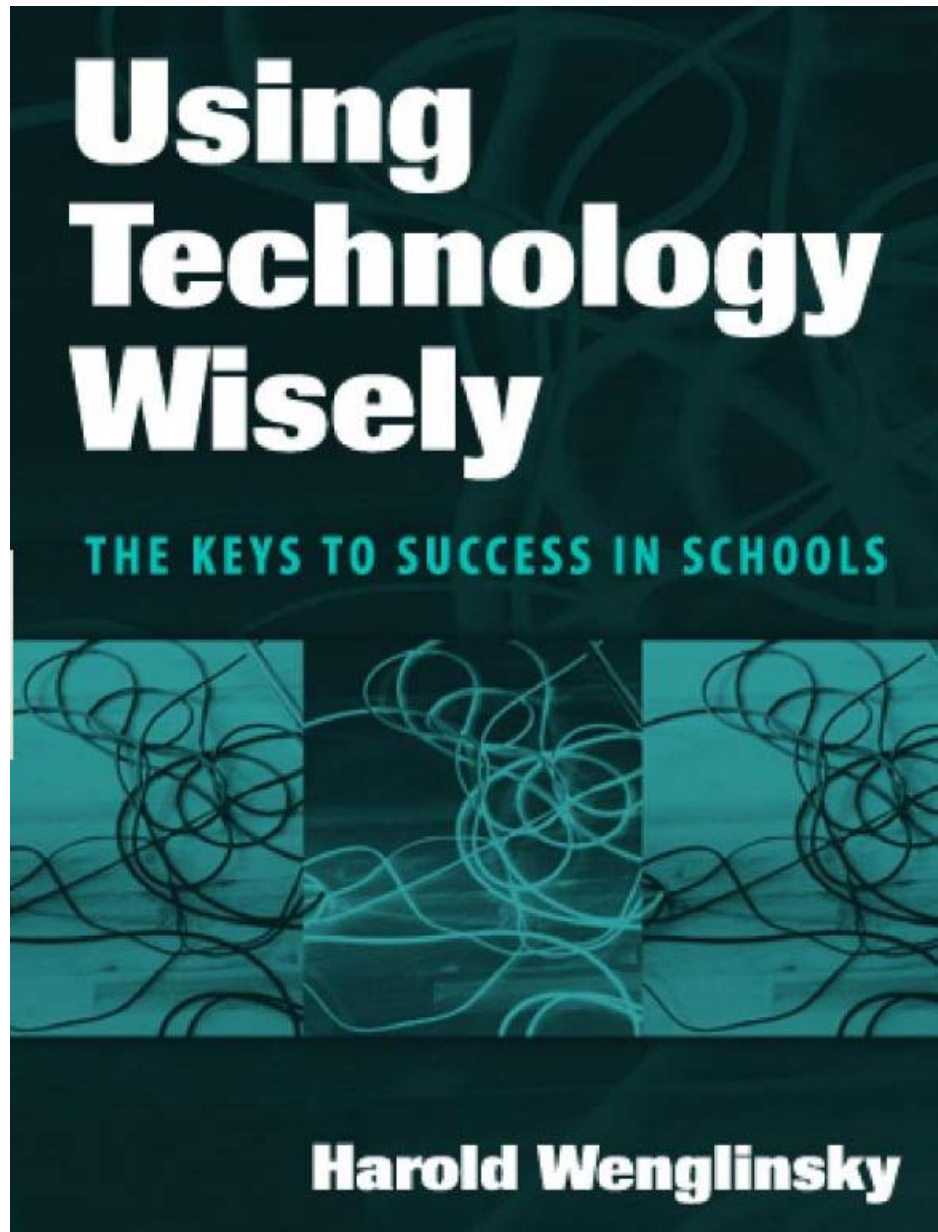
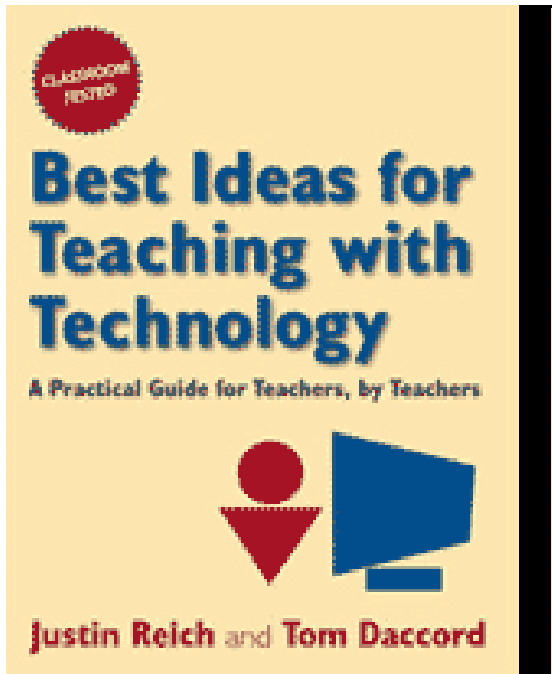
Igor V. Roshchin

Department of Physics and Astronomy
Texas A&M University



Teaching with Technologies

- Popular
- Important



Why ~~whine~~ bother?

Main Entry: **frus·tra·tion** 🗣️

Pronunciation: \(\)frəs-'trā-shən\

Function: *noun*

Date: circa 1555

1 : the act of frustrating

2 **a** : the state or an instance of being frustrated **b** : a deep chronic sense or state of insecurity and dissatisfaction arising from unresolved problems or unfulfilled needs

3 : something that frustrates



In Physics (esp. Nanoscience):

- Knowledge of frustrations is important
 - allows to learn the mechanism of the phenomenon

Who Are You?

Targeted audience:

– Colleagues:

- get a balanced evaluation
- learn workarounds

– Vendors: hear what we need and talk to us

– ITS: please, continue helping us – see how

– University policy-makers (including technical policies): learn from our problems and improve



Today's Journey

- What's good in technologies?
- What is not advertised?
- Costs (to you, your students, your university)
- Be prepared for ...
- What to do if ...?
- How can the vendors help?
- Who else can help you?

Tools/technologies

- Mastering Physics
- Vista Blackboard aka WebCT aka eLearning
 - content
 - gradebook
- CPS “clickers” from eInstruction
- Powerpoint (yes, it is still a technology!)
- Other (CPR, TurnItIn, ...)

Why use technologies?

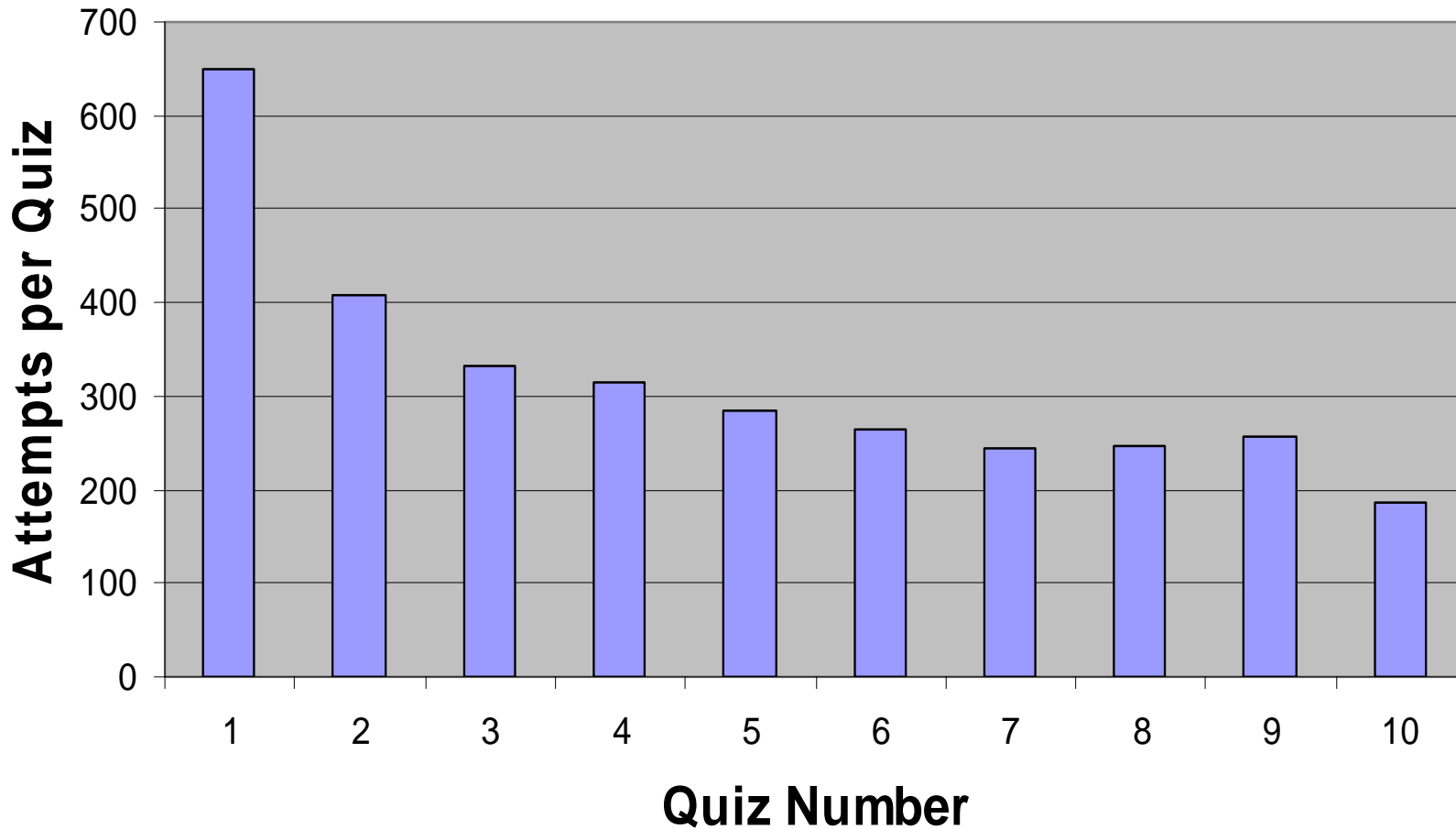
- Engages students
 - e.g. into discussion of the clicker problem
- Encourages student participation
 - Wakes them up
 - Immediate feedback (MP, WebCT, clickers)
- Makes it easy for the instructor/TA
 - Immediate feedback (MP, WebCT)
 - Communication/Feedback (eLearning)
 - No need to grade homeworks
- Enables certain learning activities
 - Weekly homework for large (100+) class

Why WebCT?

All tools implemented with WebCT, but in principle could have used other formats

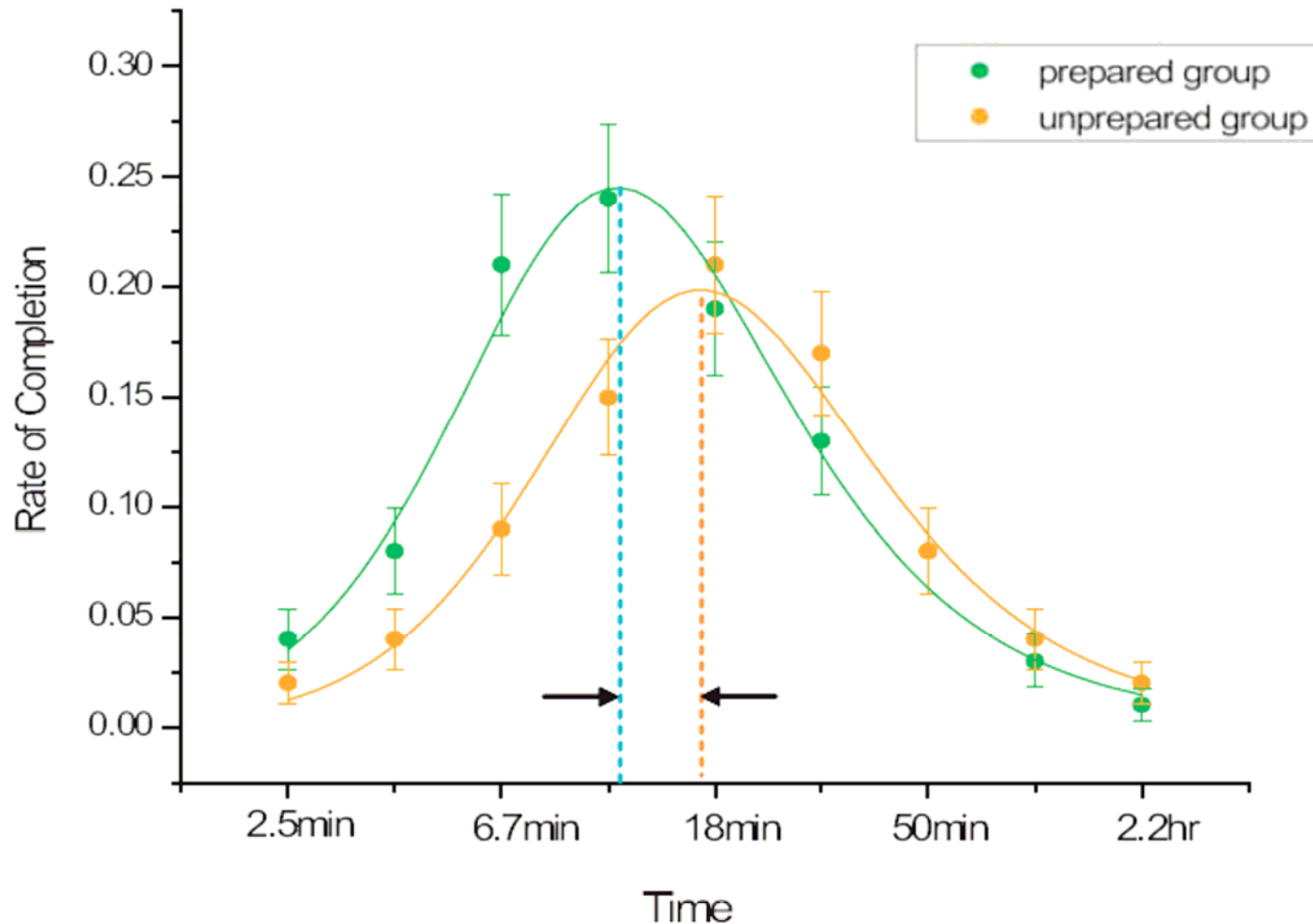
- Quiz tools readily available
- Design once, reuse indefinitely/easily for all instructors
- Students can use anywhere
- Class rosters automatically added
- NetID login security
- TA's can enter grades
- Great support from ITS!!!

WebCT and Problem solving



- Students are clearly getting better at the math
- More than 3,000 math quizzes for 120 students, or ~300 math problems/student

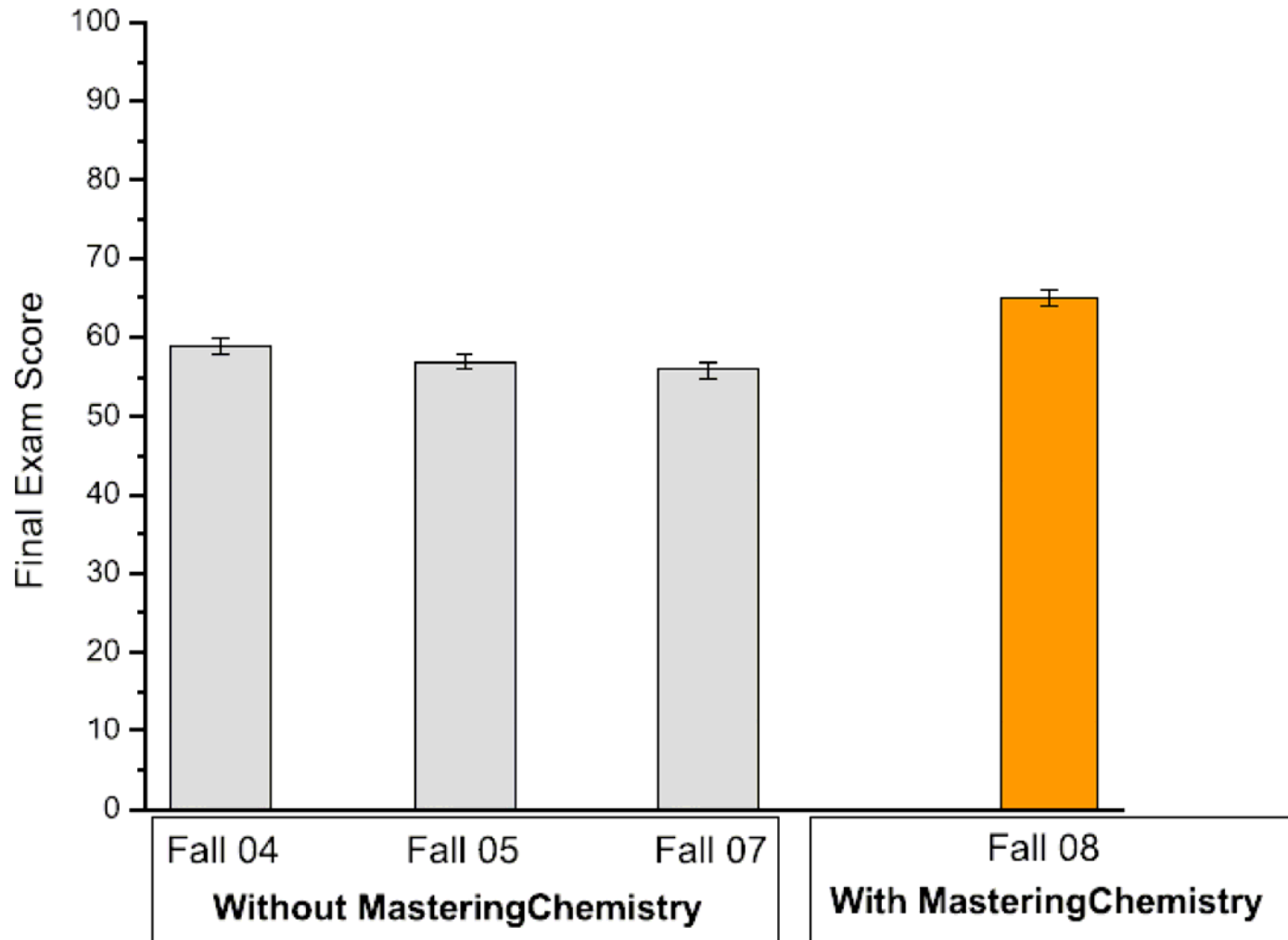
Mastering Physics



Courtesy of Claire Masson, Mastering/Pearson

- MP Tutorials improve problem solving skills

Mastering Chemistry



Courtesy of Claire Masson, Mastering/Pearson

- Improvements from when MC is not used

Number of students

Mastering (students per year)

- Astro 635
- Chemistry 772
- Biology 918
- Physics 2,939

- Total: 5,264

- *Clickers* 64 courses 8,400 Fall'09
43 courses 5,000+ Spring'10
- *eLearning* over 40,000 per semester

Why use technologies?

- Engages students
- Encourages student participation
- Makes it easy for the instructor/TA
- Enables certain learning activities

NOT Automatic!

You must be enthusiastic!

What is not advertised?

- It takes:
 - Effort
 - Time
- What it costs to
 - students
 - you
 - university

The effort

- Most things are well designed and work well IF everything goes well
 - Fall 2008: started using Mastering Physics within less than 1 week (with templates for HW assignments)
 - Fall 2008: started using clickers within 1-2 weeks
 - Spring 2009: started using WebCT within 1 week (departmental support team)
- Need great people/preconfigured content.
 - Dr. James White in Physics
 - Jeff Kurtz (ITS) and Chris Mays (eInstruction)
 - Dr. Dave Toback and his Physics WebCT Team
- Do your own homework (in advance if you can)
 - Prepare the content
 - Think about course policies (!)

Policy Example: 100%

- For ALL quizzes: Passing requires a 100% score, within the allotted time
- If they fail:
 - Indicate the correct answers
 - Unlimited number of attempts (without penalty)
 - Change the problem (slightly) on each attempt
- Passing required to move on to next quiz
- Required to pass all quizzes to pass the course

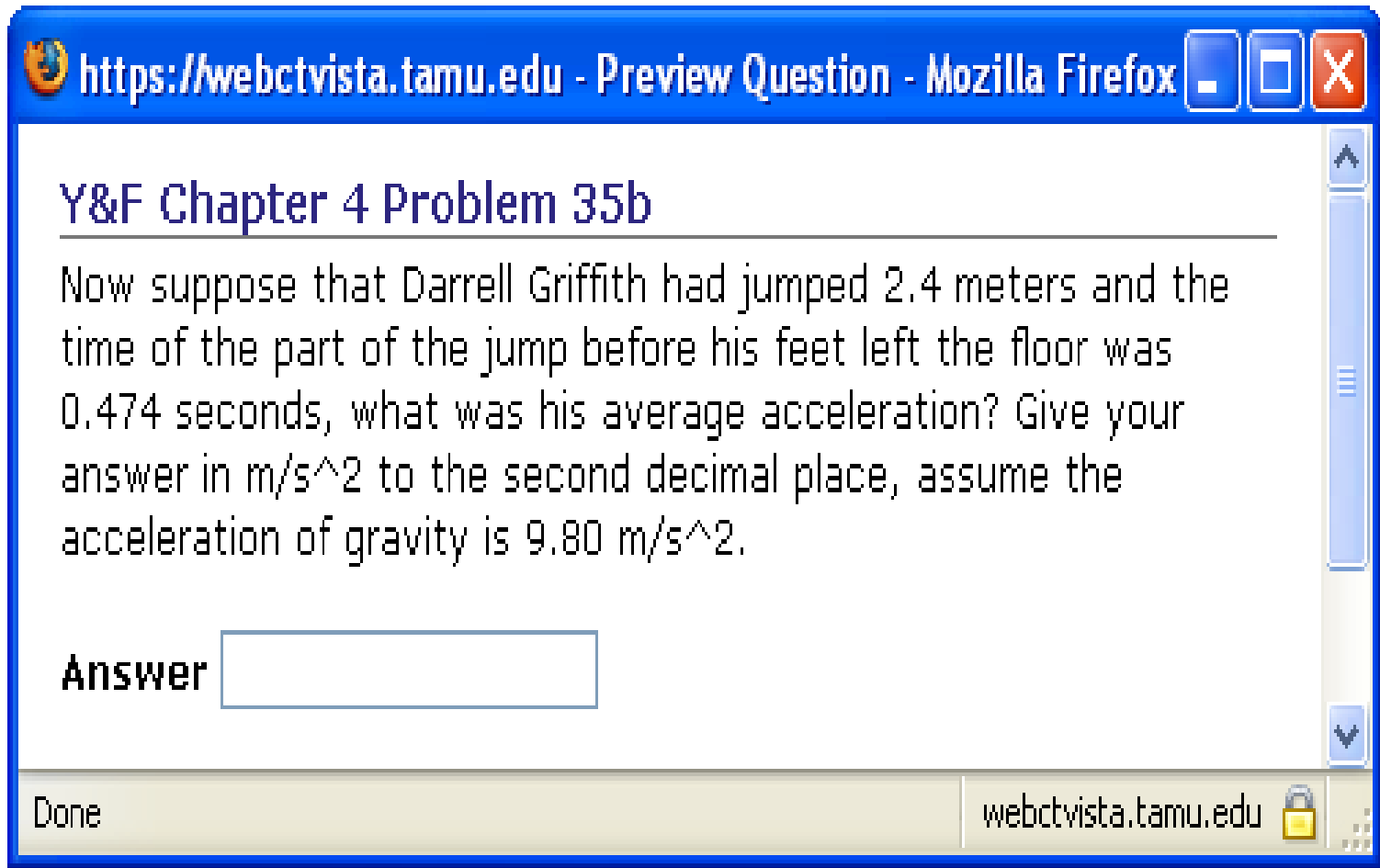
Why 100%?

- Forcing “100% policy” combats the temptation to just do easy problems
- Multiple topics and difficulty level incorporated into each quiz
 - Encourages learning material as a whole
- Students motivated by getting 100% for part of their grade (?)

Note: Yes, this means that everyone gets a 100% for their homework grade. All this does is “shift the mean grade in the course.” (Students don’t understand this...). In practice: Giving harder exams (lower mean scores) and making the homework only worth about 15% of the grade.

Policy:

Another Example using WebCT



The screenshot shows a Mozilla Firefox browser window with the address bar displaying <https://webctvista.tamu.edu> - Preview Question - Mozilla Firefox. The page content includes the title "Y&F Chapter 4 Problem 35b" followed by a physics problem: "Now suppose that Darrell Griffith had jumped 2.4 meters and the time of the part of the jump before his feet left the floor was 0.474 seconds, what was his average acceleration? Give your answer in m/s^2 to the second decimal place, assume the acceleration of gravity is 9.80 m/s^2 ." Below the text is an input field labeled "Answer". The browser's status bar at the bottom shows "Done" and the address "webctvista.tamu.edu" with a lock icon.

Force the student to have their equations ready to go!

It takes time!

- Time to prepare – That's OK!
 - great investment
 - can share with colleagues
 - some help from publishers?
- Time in class
 - Students getting ready (policy)
 - Software is slow (CPS clickers)
- Time it takes when things go wrong

What can go wrong?

Anything!

What can go wrong?

Anything and Everything!



What can go wrong?

Anything and Everything! Fall 2009:

- Howdy – new system
 - Overloaded the first day
 - Ergonomics/usability problems
- Computers in the room – takes 5-10 minutes to load
- Clickers
 - Cannot register
 - Half – do not connect
 - “Out of the box” feature is turned off by the vendor
 - Database incompatibility between SW versions.
 - Roster “collisions”: two students with the same pad ID
 - Students unregistered by the system
 - Long tech-support hold time (50 min!) and response
 - Uploading grades to eLearning: empty score turns into 0
- eLearning
 - the columns do not keep the order
 - TA’s cannot download roster (but can upload and edit)
 - Issue with the End Of Line in CSV files
- Mastering Physics
 - Oversold – long hold time.
 - Wrong response from the support about class configuration.
 - Enrollment issues
 - Tech support does what he wasn’t asked to do.
 - Errors in the problems/solutions



What can go wrong?

Anything and Everything! Fall 2009:

- Howdy – new system
 - Overloaded the first day
 - Ergonomics/usability problems
- Computer takes 5+ minutes to load
- Clickers
 - Half – do not connect
 - Cannot register
 - “Out of the box” feature is turned off by the vendor
 - Database incompatibility between different SW versions.
 - Roster “collisions”: two students with the same pad ID
 - Students unregistered by the system (no notice sent!)
 - Long tech-support hold time (50 min!) and response
 - Uploading grades to eLearning: empty score turns into “0”



What can go wrong?

Anything and Everything! Fall 2009:

- eLearning
 - the columns do not keep the order
 - TA's cannot download roster (but can upload and edit)
 - Issue with the End Of Line in CSV files
- Mastering Physics
 - Oversold – long hold time.
 - Wrong response from the support about class configuration.
 - Enrollment issues
 - Tech support does what he wasn't asked to do.
 - Errors in the problems/solutions

What should you do?



What should you do?

- **Don't panic!** (© Douglas Adams)
- In class: make an attempt, but don't waste too much time
- Outside of class: keep notes, copies, etc.
 - vendor/ITS support might not be able to reproduce
 - may not believe you
- ITS
- Vendor's tech-support

“Saving a drowning person is in his own hands”
(sarcastic Russian proverb)

Vendor tech-support

© 2005 Ted Goff www.newslettercartoons.com



**“Someone calling themselves
a customer says they want
something called service.”**

Frustrating Tech-support

- eInstruction (CPS clickers)

Date: Thu, 15 Oct 2009 13:21:31 -0500

From: Chris Mays <chris.mays@einstruction.com>

Subject: Re: Frustrations from half-baked technologies.

Igor,

I can appreciate your frustration and I am truly sorry that you have had a difficult experience this semester. I can assure you that your success is important to eInstruction and we are working toward a resolution. *Please bare with us as we seek a solution that will get help you enjoy the benefits of CPS without frustration.*

Best Regards,

Chris Mays
eInstruction

When things go wrong...

- Analysis in class
- On the phone with support
- Tech support can be
 - un(der)-trained and/or
 - unmotivated
 - over-motivated



Time it takes

Non-Bloom's Taxonomy

- Time lost in class:
 - failure of the system connection/communication
 - sluggishness of the software
 - figuring out what could be the problem for particular students.
 - total time lost: 5-8 minutes
 - total time lost in percentage to the class time (50 min):
> 10-15%

Time it takes

- Time lost in class:
 - sluggishness of the software
 - failure of the system connection/communication
 - figuring out what could be the problem for particular students.
 - total time lost: 5-8 minutes
 - total time lost in percentage to the class time (50 min):
> 10-15%
- Time lost outside of class:
 - on the phone/e-mail chat with the untrained/unmotivated support
 - proving why support's suggestions are incorrect and useless
 - writing e-mails to support and others
 - waiting for response

Total Costs

- Costs of:
 - time wasted (both paid by the university and my personal time)
 - missed opportunities
 - lost confidence (by students)
 - hardware and registration for students (aka revenue for the company)
 - hardware(*) and installation for the university
- Total cost - *prohibitively high*
- **Overall experience - priceless**
(not sponsored by MasterCard)

It costs

- eInstruction CPS “clickers” classroom:
 - \$1975.00 (16)
 - \$2965.00 (24)
 - \$3955.00 (32)
- Single clicker: \$25-35.
- Registration: **\$13** (one semester), capped at \$39. Or \$35 “lifetime”
- At “non-standardized institution” \$15, capped \$60.
- Mastering (includes e-book)
 - Included with the new book
 - “a la carte” \$50 Physics, \$30-50 other
 (“Price depends of length of access and amount of material”)

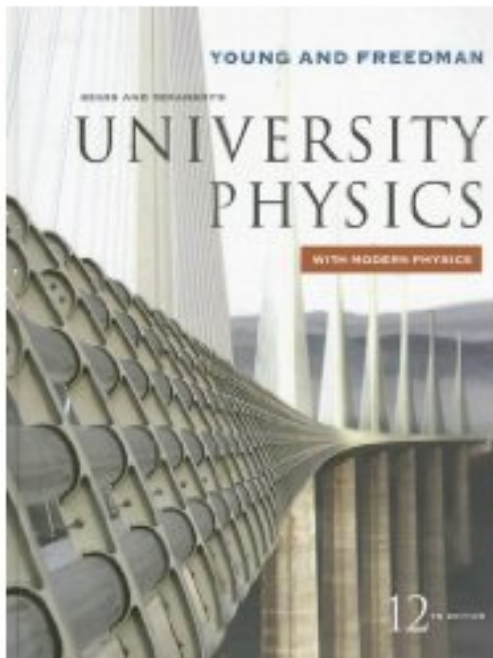
For a Student

- New Book vs. Used Book

amazon.com

Shop All Departments Search Books

Books Advanced Search Browse Subjects New Releases Bestsellers The Ne



University Physics with Modern Physics (12th Edition)

~ [Hugh D. Young](#) (Author), [Roger A. Freedman](#) (Author), [Lewis Ford](#) (Author)

★★★★☆ (4 customer reviews)

List Price: ~~\$200.00~~

Price: **\$171.00** & this item ships for **FREE with Super Saver S**

You Save: ~~\$29.00~~ (15%)

In Stock.

Ships from and sold by **Amazon.com**. Gift-wrap available.

Want it delivered Thursday, February 11? Order it in the next **21 hours a Shipping** at checkout. [Details](#)

[16 new](#) from \$134.01 [67 used](#) from \$89.79

For a Student

- Mastering Physics \$50
- Clicker: \$25
- Clicker registration \$13

- Sub-total: \$85 on top of the rest
(tuition, fees, textbook, etc.)



Number of students

Mastering (students per year)

- Astro 635
 - Chemistry 772
 - Biology 918
 - Physics 2,939
-
- Total: 5,264

- *Clickers* 64 courses 8,400 Fall'09
43 courses 5,000+ Spring'10

- *eLearning* over 40,000 per semester³⁸

Outcomes

(what's in it for you?)

Upon my inquiries and activities:

- Mastering Physics:
 - Found and corrected many errors
 - I proposed the algorithm for an automated mechanism of detecting errors.
 - Improved (somewhat) security
 - Hopes for further improvements
- eLearning/WebCT:
 - Discovered incompatibility issues with older modules
- CPS clickers:
 - Proposed solutions for integration that will allow troubleshooting without FERPA violations

Improvements?

- Mastering Physics:
 - Implement proper security standards (SSL-enabled)
 - Pass-through registration integrated with eLearning
 - Integration with eLearning gradebook
 - Implement the algorithm for an automated mechanism of detecting errors
 - Train customer support personnel
 - Improve response time:
 - Customer support
 - “Back-office” – content team.

Improvements?

- eLearning/WebCT:
 - Improve speed and browser compatibility
 - Find a mechanism for debugging issues (A&M policy and relation with the vendor)
 - Solve EOL issue with CSV
- eInstruction (CPS clickers):
 - Improve customer service response (attitude and time)
 - Make the software FASTER and less of a resource hog
 - Try to keep compatibility between versions
 - OOTB feature – make that instructor-configurable option
 - Do not convert empty score into “0” upon uploading to eLearning
- ITS/TAMU
 - Stop using UIN as a gradebook identifier

To use or not to use?

- It's *YOUR* decision
- Caveat Emptor
(lat.: "Let the *buyer beware*")
 - Benefits
 - Time and energy costs
 - Frustrations
 - Make sure you have/build a support team
 - Always have a "plan B".



Acknowledgements



Acknowledgements

- For great support and help:
 - My colleagues (Dr. Dave Toback and his Phys.Dept. “WebCT” team, Drs. Alexey Safonov and James White)
 - ITS (several people, especially Jeff Kurtz)
- For various help, input and contributions from
 - *Mastering Physics/Pearson* (esp. Melinda Horan, Terry Harris, Yvette Freeman, Claire Masson)
 - *eInstruction* (esp. Chris Mays, Lori Rainery).
- For contributing to frustration(s)
 - *eInstruction* (esp. David E. Smith and Chris Mays - for lack of followup on the problem since October 15, 2009)
 - *Mastering* under-trained tech-support script-readers and script-response pushers
 - *Pearson/Mastering* technical leadership – for disregard of our needs, FERPA, and industry standards.
 - HECC classroom equipment management; HECC support team – for lack of efficiency and interest