Technology: cure or headache?

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Physics

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Technology is not a magic bullet
A brief history of Information Technology

- blackboard
- overhead projector
- television
- computer
What’s wrong with old methods for presenting content?
The Psalms Scroll of Qumran Cave 11
Belles Heures du Duc de Berry
1408-09
The Way to Calvary
DISCORSI E DIMOSTRAZIONI MATematiche, intorno à due nuove scienze
Attenenti alla Mecanica & i Movimenti Locali, del Signor
GALILEO GALILEI LINCEO, Filosofo e Matematico primario del Serenissimo Grand Duca di Toscana.
Con una Appendice del centro di gravità d’aluni Solidi.

IN LEIDA,
Appresso gli Elsevirii, M. D. C. XXXVIII.
but lectures have barely evolved...
The real problem

not delivery of information
but assimilation of knowledge
think about educational goals before introducing technology
What constitutes effective use of technology?

- furthers educational goals
- facilitates new modes of learning
- investment commensurate with returns
- reusable and flexible
What problems can technology help with?

Large lectures...
- are impersonal
- focus on information transfer
- don’t necessarily address students’ needs
- move some of the information transfer out of the classroom
- find out what needs to be “lectured” on
Just-in-time teaching

Pre-class reading assignment

- 2 questions on content
- 1 feedback question

Physics 1a Reading Assignments

- Brian Chan
  - 11/29/08 11:03:27 PM
  - Total responses over 8
  - I was a little bit confused about the relationship between centrifugal force and net tangential force (as in the case of the cube on the turntable). Is the answer in part B that once the static friction force reaches its maximum, the cube will fly off. Does this mean that the centrifugal force is entirely caused by the static friction force?*

- Alvin Cabrera
  - 11/29/08 12:00:19 AM
  - Total responses over 6
  - The discussion of centrifugal force was interesting, I guess "centrifugal force" does not exist, is it?

- Clintia Guzman
  - 11/29/08 11:51:23 AM
  - Total responses over 3
  - *Note on answer or feedback
“Please tell us what you found difficult or confusing. If you did not find anything difficult or confusing, please tell us what you found most interesting.”
Just-in-time teaching

Physics 1A Reading Assignments
Process Feedback

Brian Chan
11/03/98 11:03:27 PM
Total responses sent: 8

I was a little bit confused as to the relation between centripetal force and static frictional force (as in the case of the cube on the turntable). The answer in part B says that once the static frictional force reaches its maximum, the cube will fly off. Does this mean that the centripetal force is entirely contained by the static frictional force?

Notebook | Email | All Answers

Alvin Cabrera
11/03/98 12:06:19 AM
Total responses sent: 0

The discussion of centripetal force was interesting. I guess "centripetal force" does not exist, then?

Notebook | Email | All Answers

Cinthia Guzman
11/03/98 11:01:03 AM
Total responses sent: 3
Just-in-time teaching

Benefits:

- more focused lecture
- connects names and faces
- additional student-faculty interaction
Personal response system

- keep students involved
- probe and address difficulties
Personal response system

push this button...

...so this lights up
Personal response system

1. aim tip at nearest receiver

2. press button corresponding to answer

3. watch for your ID on screen
Consider a rectangular metal plate with a circular hole in it.
Consider a rectangular metal plate with a circular hole in it.

When the plate is heated so it uniformly expands, the diameter of the hole

1. increases

2. stays the same

3. decreases
Just so you won’t lose sleep:
Just so you won’t lose sleep:
Personal response system

Benefits:
- engages students
- gets students to cooperate
- provides real-time feedback
we need education technology, not just information technology
Dr. Catherine Crouch
Elizabeth Hess
Leo Donnelly

For a copy of this presentation and additional information, see:

http://mazur-www.harvard.edu