- 1. Go to: http://LCatalytics.com
- 2. Create instructor account
- 3. After logging in, click the "Student view" tab
- 4. Join session 301431

Learning Catalytics: Socrates Meets Facebook and High Academic Standards





Learning Catalytics: Socrates Meets Facebook and High Academic Standards





Think of something you are good at

1 lcatalytics.com



create student account



Now think how you became good at it



1 lcatalytics.com

2

create student account











education





better pay attention!



2 PI



What happens in a lecture?













some people talk in their sleep

lecturers talk while other people are sleeping

(Albert Camus)

















education is not just information transfer





education is not just information transfer





education is not just information transfer















only one quarter of maximum gain realized



R.R. Hake, Am. J. Phys. 66, 64 (1998)



not transfer but assimilation of information is key





education



1. transfer of information







1. transfer of information

2. assimilation of that information





1. transfer of information (in class)

2. assimilation of that information





1. transfer of information (in class)

2. assimilation of that information (out of class)





Should focus on THIS!

1. transfer of information (I)

2. assimilation of that information (out of class)





1. transfer of information (in class)

2. assimilation of that information (out of class)





1. transfer of information (out of class)

2. assimilation of that information (in class)





1. transfer of information (out of class)

2. assimilation of that information (in class)


































thermal expansion



























When the plate is uniformly heated, the diameter of the hole

- 1. increases.
- 2. stays the same.
- 3. decreases.









When the plate is uniformly heated, the diameter of the hole

1. increases 2. ctave the same. 3. decreases.







When the plate is uniformly heated, the diameter of the hole

- 1. increases.
- 2. stays the same.
- 3. decreases.









Before I tell you the answer...



















You...

1. made a commitment







- 1. made a commitment
- 2. externalized your answer







- 1. made a commitment
- 2. externalized your answer
- 3. moved from the answer/fact to reasoning







- 1. made a commitment
- 2. externalized your answer
- 3. moved from the answer/fact to reasoning
- 4. became emotionally invested in the learning process







When the plate is uniformly heated, the diameter of the hole

- 1. increases.
- 2. stays the same.
- 3. decreases.









When the plate is uniformly heated, the diameter of the hole

- 1. increases. V
- 2. stays the same.
- 3. decreases.

































































first year of implementing Pl









first year of implementing Pl









first year of implementing PI










PI











2 PI









what about problem solving?































So better understanding leads to better problem solving!







So better understanding leads to better problem solving!

(but "good" problem solving doesn't always indicate understanding!)













in a lecture, students...







in a lecture, students...

1. don't pay utmost attention











3 test





3 test













in a lecture, students...

1. don't pay utmost attention

2. think they know it







in a lecture, students...

1. don't pay utmost attention

2. think they know it

3. are not confronted with misconceptions







Security 1. don't pay utmost attention

2. think they know

onted with misconceptions

in a lecture, students...















an illusion...







Education is not just about:

- transferring information
- getting students to do what we do







Education is not just about:

- transferring information
- getting students to do what we do

active participation a must!







not technology, but pedagogy matters









PeerInstruction.net

Peer Instruction: Practical Details





Peer Instruction: Practical Details





lectures focus on information transfer...

lectures focus on information transfer...

but education is much more!

1. information transfer

1. information transfer

2. assimilation of information

1. information transfer (easy and done in class)

2. assimilation of information (hard and left to student)

1. information transfer (out of class)

2. assimilation of information (in class)

use JiTT before class and PI in class!

Frequently Asked Questions

"How much time to spend on each PI step?"
























Frequently Asked Questions

"Can this method be used in my class,

where questions don't necessarily have right answers?"

Bernard Gert (1934 – 2011)

Moral philospher Professor at Dartmouth



"Morality is an informal public system applying to all rational persons, governing behavior that affects others, and includes what are commonly known as the moral rules, ideals, and virtues and has the lessening of evil or harm as its goal."

Bernard Gert (1934 – 2011)

Moral philospher Professor at Dartmouth



Bernard Gert's moral system created by 10 rules:

- 1. Do not kill
- 2. Do not cause pain
- 3. Do not disable
- 4. Do not deprive of freedom
- 5. Do not deprive of pleasure
- 6. Do not deceive
- 7. Keep your promises
- 8. Do not cheat
- 9. Obey the law
- 10. Do your duty (as required by job, circumstances).

Heinz's wife was near death, and her only hope was a drug that had been discovered by a pharmacist who was selling it for an exorbitant price. The drug cost \$20,000 to make, and the pharmacist was selling it for \$200,000. Heinz could only raise \$50,000 and insurance wouldn't make up the difference. He offered what he had to the pharmacist, and when his offer was rejected, Heinz said he would pay the rest later. Still the pharmacist refused. In desperation, Heinz broke into the store and stole the drug.

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Should Heinz have broken into the store to steal the drug for his wife?

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- **10. Do your duty (as required by job, circumstances).**

Should Heinz have broken into the store to steal the drug for his wife?

1. Yes 2. No



Bernard Gert's moral system created by 10 rules:

- 1. Do not kill
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- Do not deprive of r
 Do not deprive of r
- Should Heinz have broken intertme storeno steel me drug for ins wife?

- Keep your promises8. Do not cheat
- 9. Obey the law
- 10. Do your duty (as required by job, circumstances).

2. No





Don't need a correct answer!

Frequently Asked Questions

"How can I be sure that my students will prepare for class?"

Students do not come to class prepared, because...

- 1. they don't have time.
- 2. they are not motivated to learn.
- 3. their instructors take away the incentive.
- 4. they do not have the requisite skills.
- 5. of some other reason.
- 6. They do come prepared in my class!

(select what you consider to be the main reason)

Just-in-time-Teaching (JiTT)

www.jitt.org



JiTT workflow

topic 1 reading assigment













"How is preparing a PI class different from preparing a lecture-based class?"

transitioning: where does the effort go?



transitioning: where does the effort go?



New activities:

- **1. Reading assignment**
- 2. ConcepTests
"How can I make sure all students participate?"

"When/which poll results do I show?"

"Will it work at my institution?"

It works here...



...but will it work here?

. 50%











exam performance



exam performance



student retention



student retention



student retention



similar learning gains in different environments

"How do I cover everything using this method?"

	traditional	PI
in-class coverage	complete	partial

	traditional	PI
in-class coverage	complete	partial
out-of-class coverage	?	complete

	traditional	PI
in-class coverage	complete	partial
out-of-class coverage	?	complete
material learned	little	substantial

	traditional	PI
in-class coverage	complete	partial
out-of-class coverage	?	complete
material learned	little	substantial

what good is coverage if little is retained?

"How do I write/find good questions for ...?"





ConcepTests



ConcepTests



ConcepTests





... or try searching Google:

<subject> "Peer Instruction" <subject> ConcepTest <subject> "Concept Test" <subject> clickers **Funding:**

National Science Foundation

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