

Peer Instruction Workshop

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**Taking Active Learning to the Next Level:
Real Solutions for your Classroom**

Dawson College

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Montreal, Quebec



mazur.harvard.edu



Get your clickers ready!



- No on off button
- Only last click counts
- Answer displays screen

Where we are going

After this workshop you should be able to:

- 1. Identify your current approach to education as knowledge or understanding driven**
- 2. Know the limitations of lecture**
- 3. Articulate what Peer Instruction is and how it feels**
- 4. Know that clickers and Peer Instruction can be used to build understanding**
- 5. Re-evaluate your approach to education**

Where we are going

- Quick survey
- What is education
- Lecture's lullaby
- The Wake up Call
- Peer Instruction
- The Final Wake up Call

Quick survey

Clickers

1. Never heard of them
2. Heard of them, but don't really know what they do
3. I am familiar with them, but no desire to use
4. I want to use them in my classes, but don't yet
5. I use them in my classes

Quick survey

Peer Instruction (Eric Mazur)

1. Never heard of it
2. Heard of it, but don't really know what it is
3. I am familiar with it, but no desire to use it
4. I want to use it in my classes, but don't yet
5. I use it in my classes

Quick survey

**For the next few questions, think of a
course you are currently teaching**

Quick survey

I can motivate my students to do their reading before class

1. Strongly agree
2. Agree
3. Neither agree nor disagree
4. Disagree
5. Strongly Disagree

Quick survey

Lecturing is the best way for me to cover the amount of material I need to cover in this subject.

1. Strongly agree
2. Agree
3. Neither agree nor disagree
4. Disagree
5. Strongly Disagree

Quick survey

My students learn a lot of important knowledge from my presentations or lectures on this subject.

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Quick survey

I am much better at giving lectures than my colleagues.

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What is education?

**Think of something you are good at -
something you do well.**

What is education?

**Think of something you are good at -
something you *do* well.**

***How* did you become good at that?**

What is education?

Became good at it by:

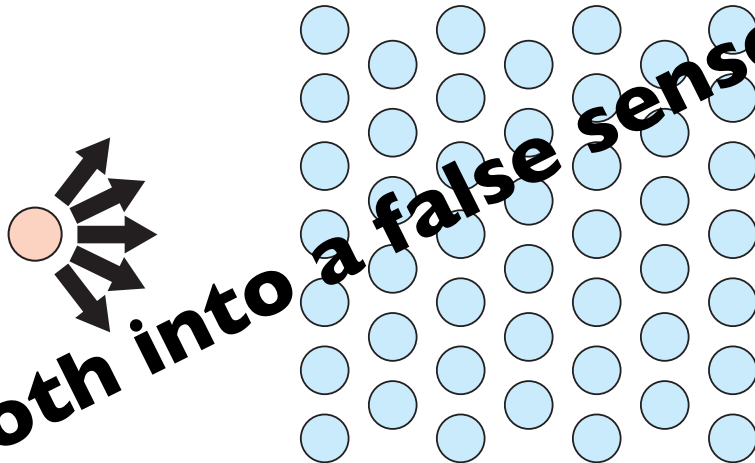
1. Listening to lectures
2. Trial and error
3. Practicing
4. Apprenticeship or observation
5. Other

What is education?

Education is much more than knowledge delivery.

Lecture's Lullaby

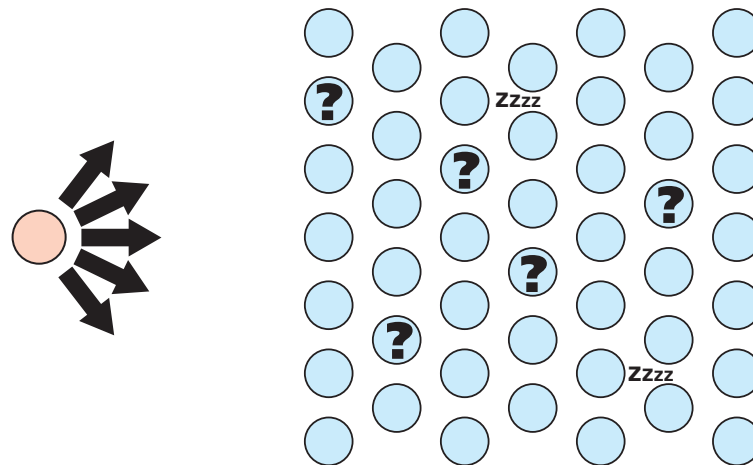
Lecture lulls both into a false sense of security

A diagram showing a speaker on the left, represented by an orange circle with five black arrows pointing outwards. To the right of the speaker is a grid of 30 light blue circles arranged in 5 rows and 6 columns, representing sound waves or a field of influence.

Students think they understand in lectures.
Never confronted with the reality that they don't.
Perform well without understanding.

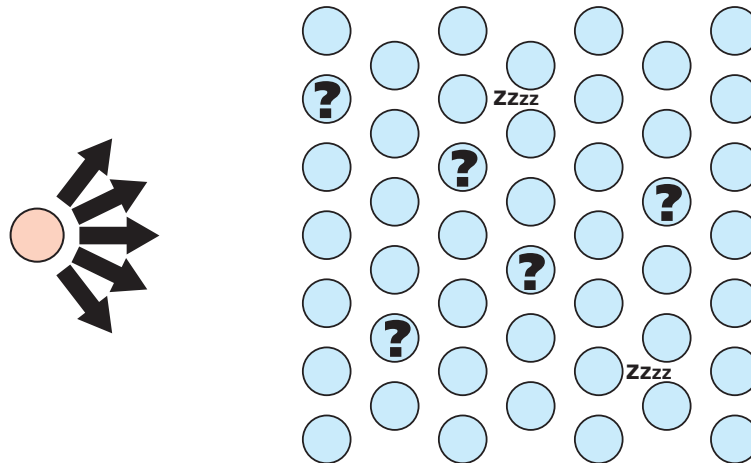
Faculty think students understand in lectures.
Never confronted with the reality they they don't

Lecture's Lullaby



Some people talk in their sleep.

Lecture's Lullaby



Some people talk in their sleep.

Lecturers talk while other people are sleeping.

Camus

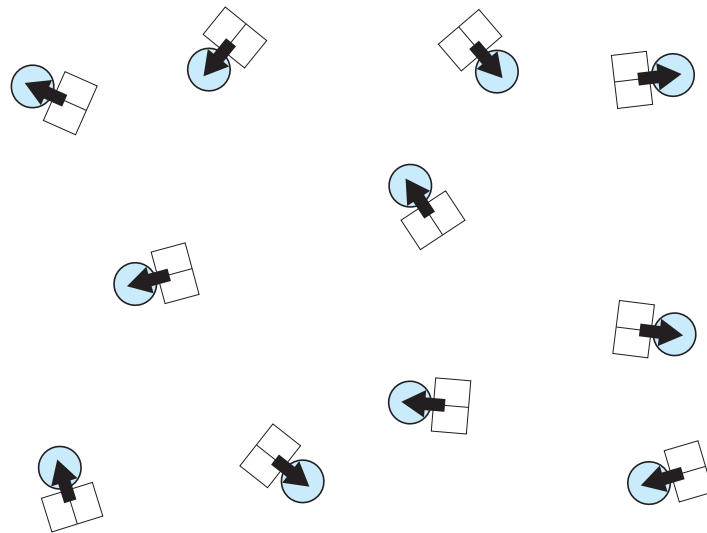
The Wake Up Call

We cannot possibly teach our students all knowledge in our disciplines.

But we can teach them Big Ideas that allow them to **transfer knowledge** across contexts.

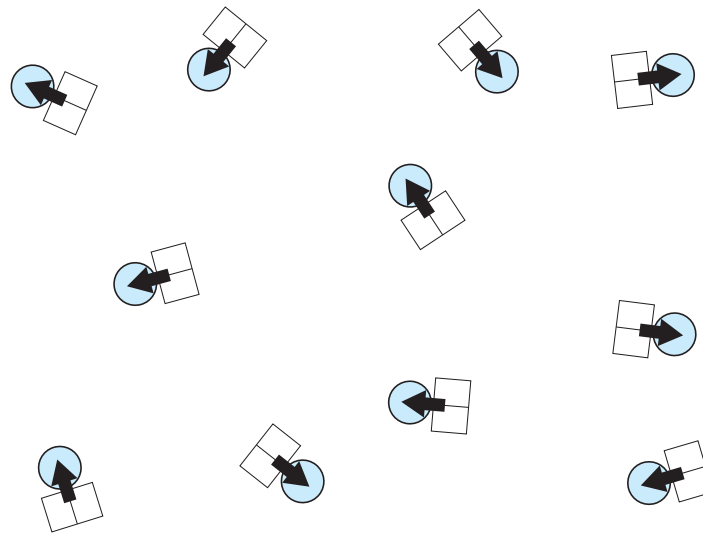
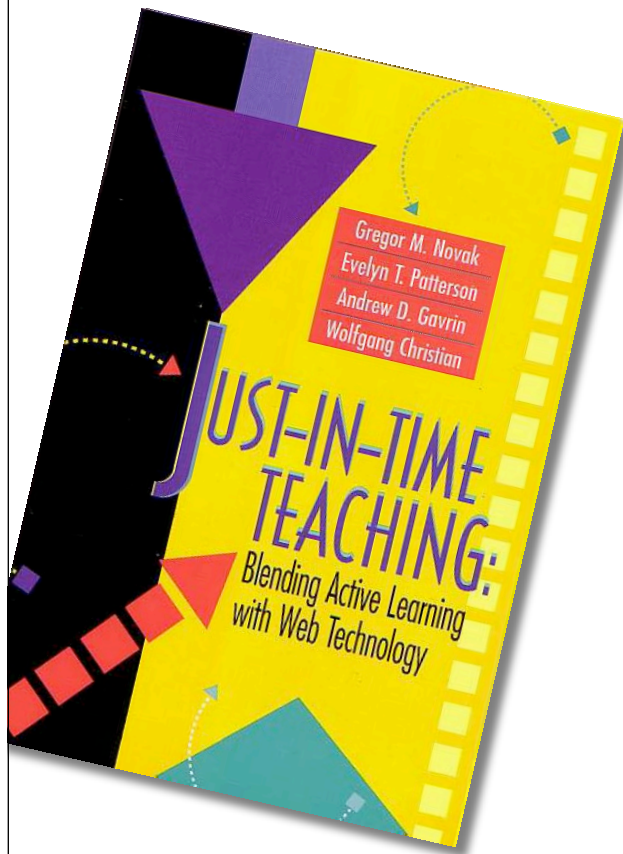
You can forget knowledge, but you cannot forget true understanding.

The Wake Up Call



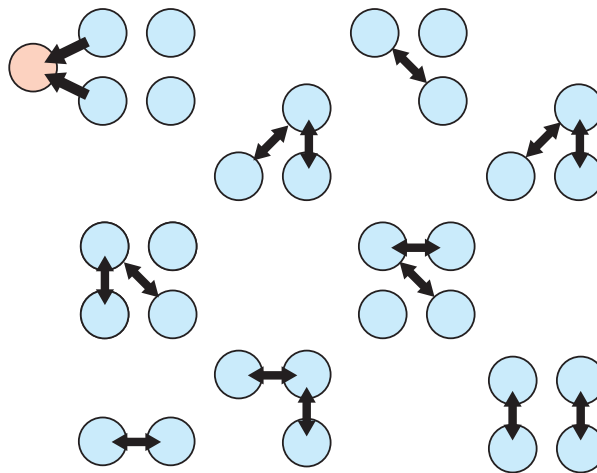
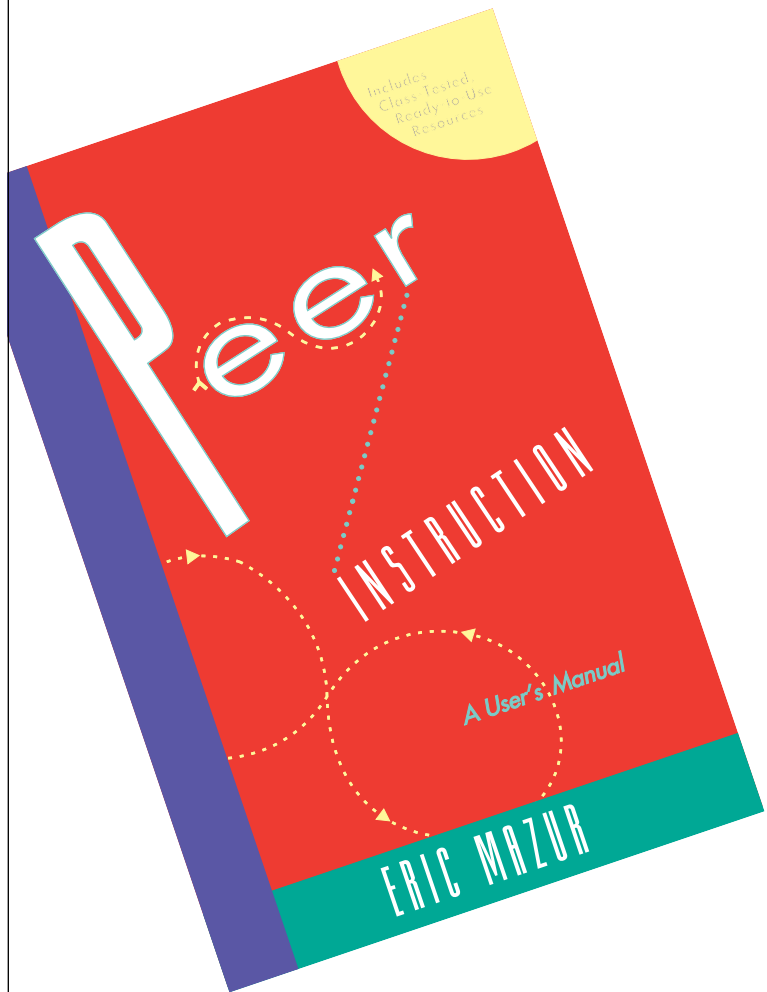
Move knowledge delivery out of the classroom

The Wake Up Call



Move knowledge delivery out of the classroom

The Wake Up Call



Move knowledge transfer in

question

question



think

question



think



poll

question



think



poll



discuss

question



think



poll



discuss



repoll



question



think



poll



discuss



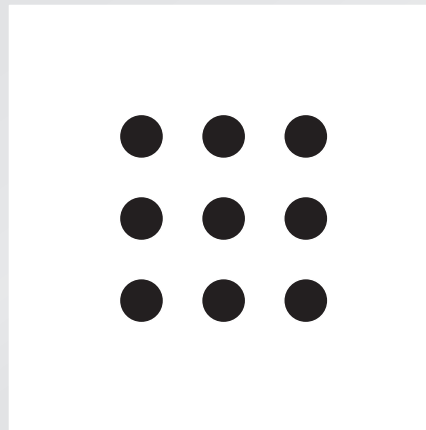
repoll



explain

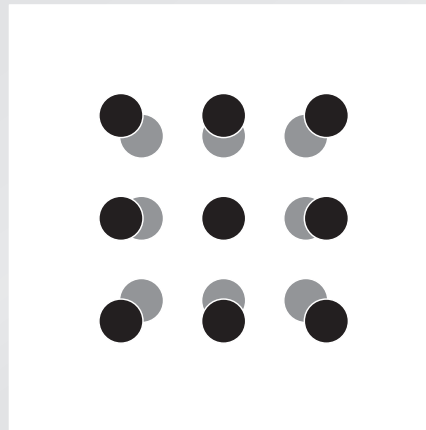
Let's try it!

When metals heat up, they expand because all atoms get farther away from each other.



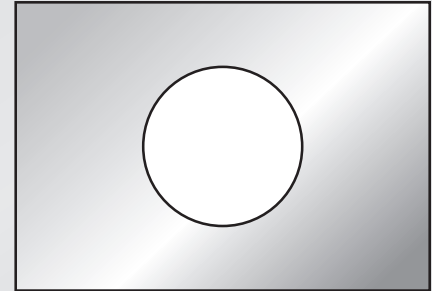
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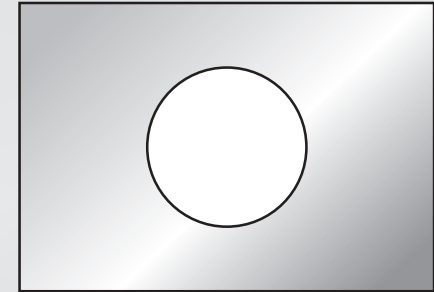
Let's try it!

**Consider a rectangular metal plate
with a circular hole in it.**



Let's try it!

Consider a rectangular metal plate with a circular hole in it.



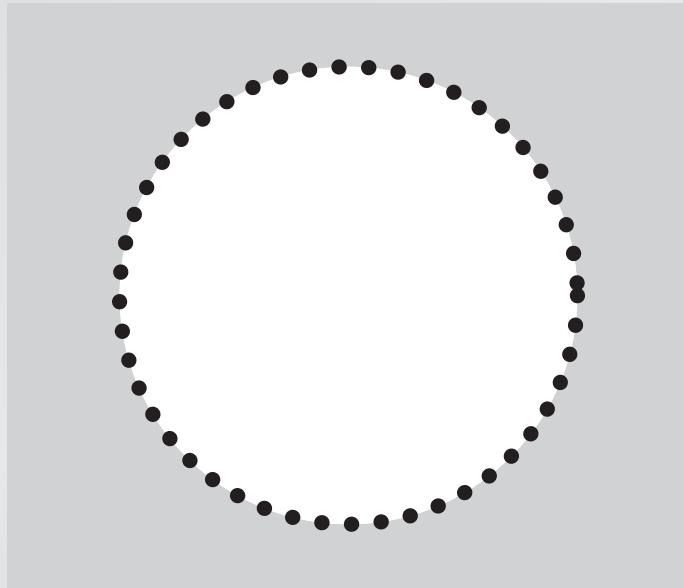
When the plate is uniformly heated, the diameter of the hole

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



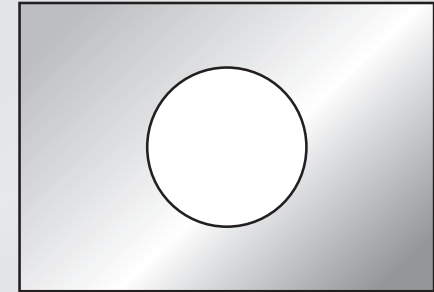
Let's try it!

consider the atoms at the rim of the hole



Let's try it!

Consider a rectangular metal plate with a circular hole in it.



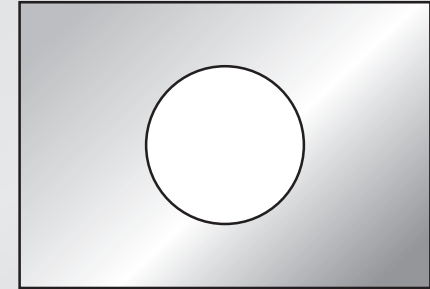
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Let's try it!

Consider a rectangular metal plate with a circular hole in it.



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

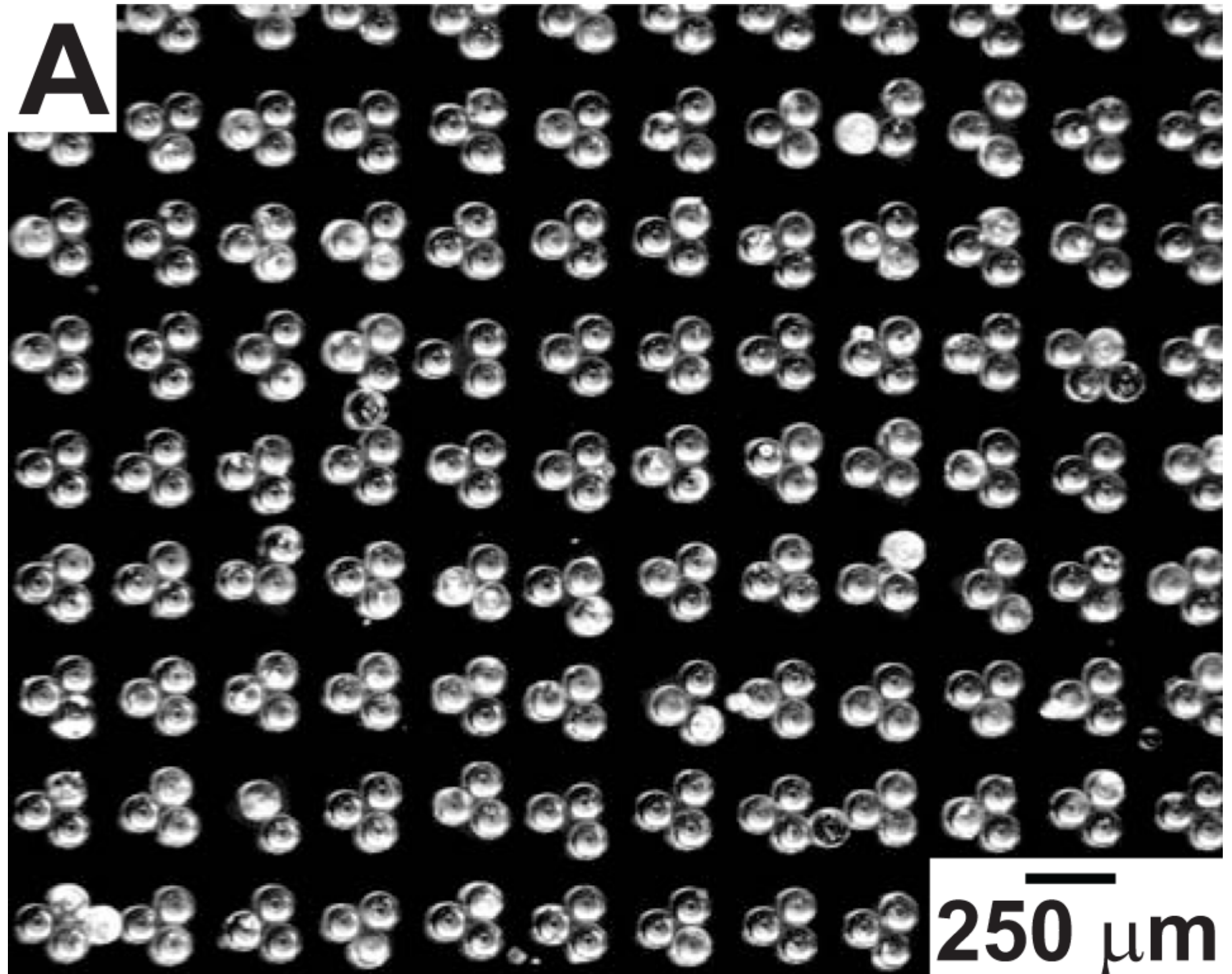
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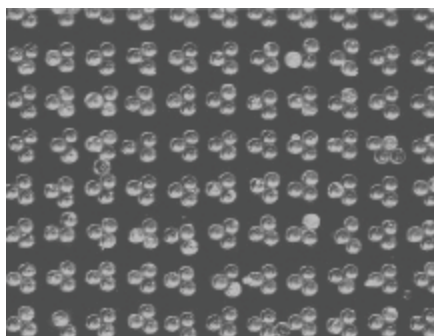
Let's Try It!

You are an undergraduate student working in a chemistry laboratory. You take a microscopic photographic of a new sample you just created.

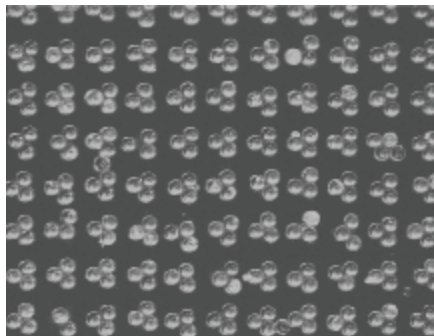
A



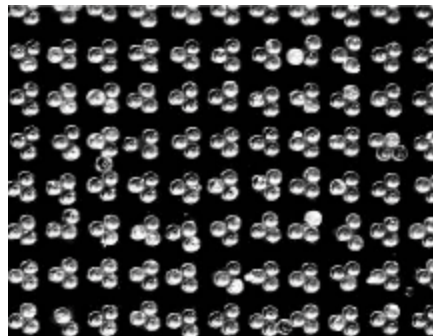
original



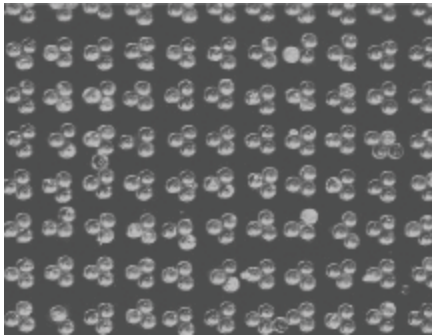
original



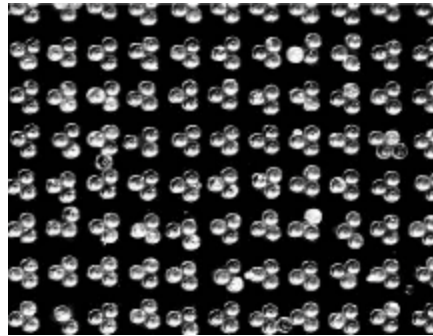
1. adjust contrast



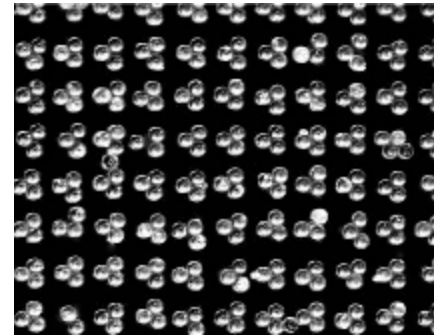
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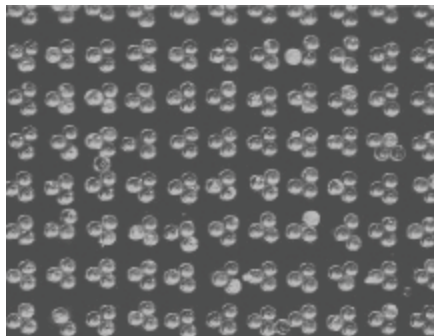
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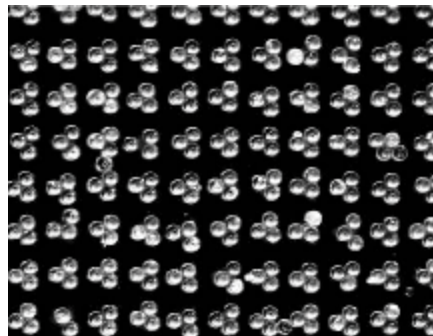
2. remove blemishes



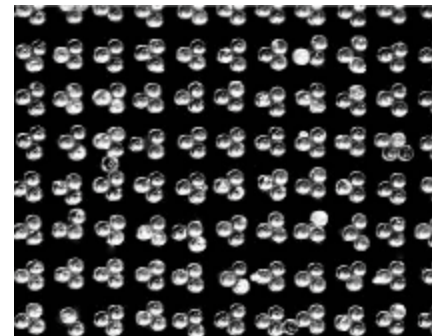
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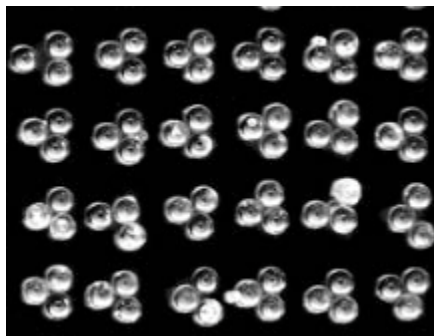
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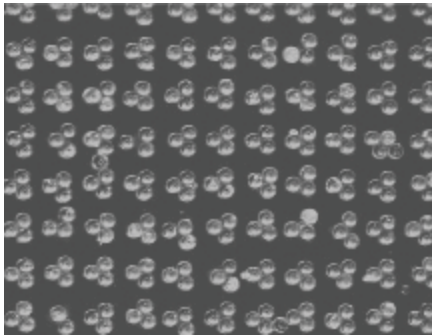
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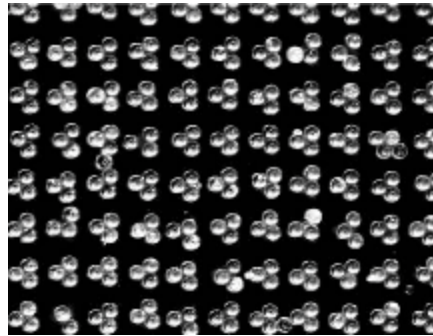
3. crop



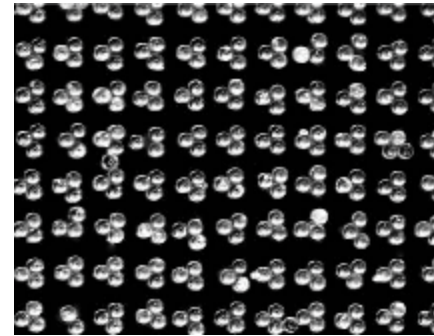
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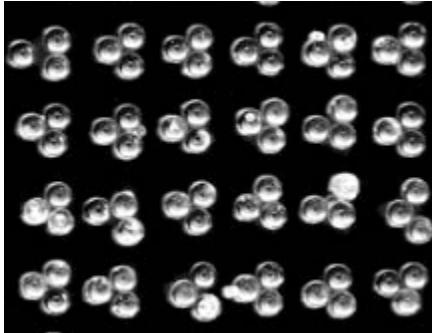
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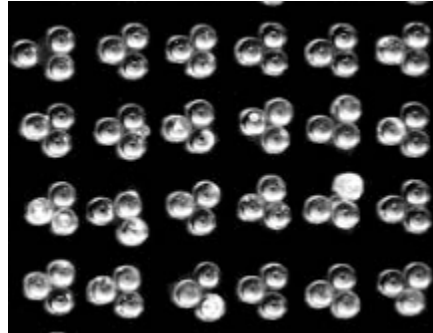
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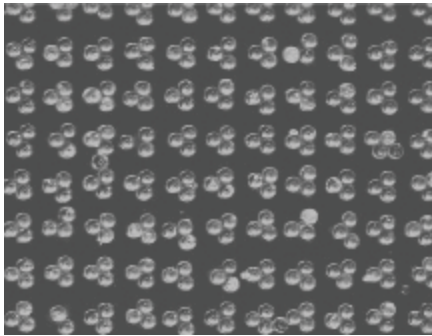
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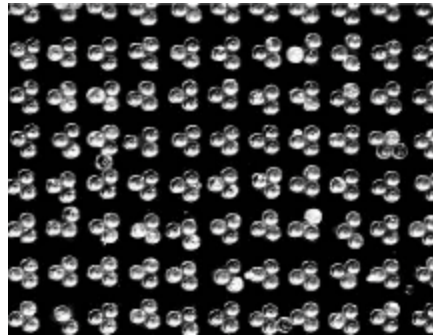
4. remove outliers



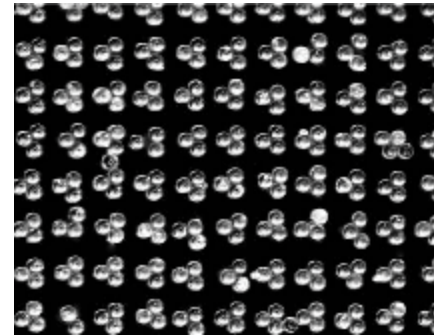
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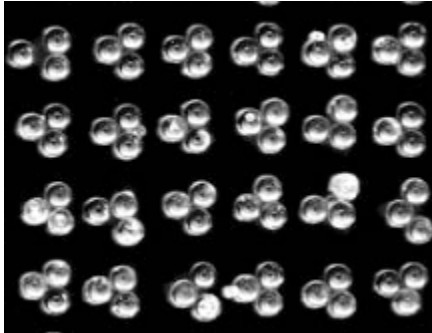
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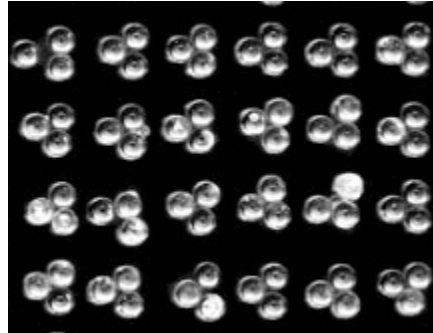
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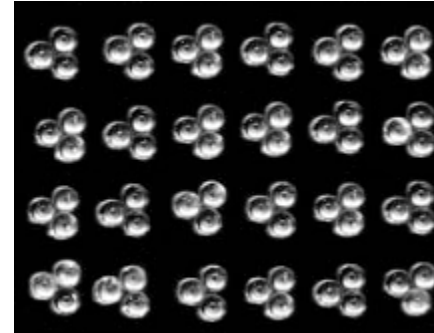
3. crop



4. remove outliers



5. reconstruct



Let's try it!

At which step were acceptable standards of ethics violated?

- 1. Optimize brightness/contrast**
- 2. Remove blemishes**
- 3. Crop on optimal area**
- 4. Remove outliers**
- 5. Reconstruct image with parts copied from other locations**

Let's try it!

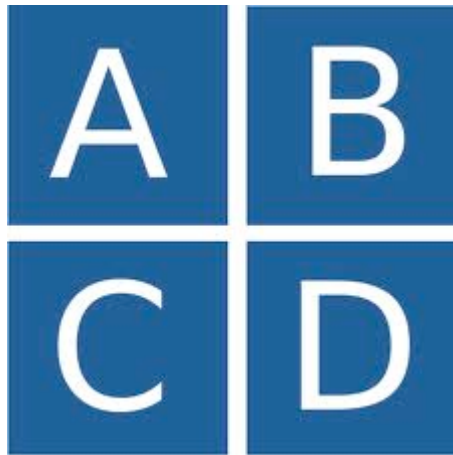
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- 4. Remove outliers**
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No right answer required!

Are clickers necessary?

Use Flashcards



Are clickers required?

Use hands



Quick survey

I can motivate my students to do their reading before class

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2. Agree
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Quick survey

Clickers

1. Never heard of them
2. Heard of them, but don't really know what they do
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The Final Wake Up Call

Myth: I must cover the material!

The Final Wake Up Call

Myth: I must cover the material!

Debunked

You must *UN*cover the material!



Join now!

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