Memorization or understanding: are we teaching the right thing?
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OSA Student Chapter
Universidad Nacional de Colombia
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education
1 education
2 PI
1 education
2 PI
3 test
better pay attention!
What happens in a lecture?
education
some people talk in their sleep
some people talk in their sleep

lecturers talk while other people are sleeping

(Albert Camus)
education
The result?

EDUCACION
Lack of learning
Lack of learning
Lack of retention
not transfer but assimilation of information is key
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)
1. transfer of information (in class)

2. assimilation of that information (out of class)

Should focus on THIS!
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)
question

think
question

think

poll
question
think
poll
discuss
question
think
poll
discuss
repoll
thermal expansion
all of them
all of them
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 uniformly heated, the diameter of the hole

1. increases.
2. stays the same.
3. decreases.
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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2. stays the same.
3. decreases.
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.
Before I tell you the answer...
Before I tell you the answer, let’s analyze what happened.
Before I tell you the answer, let’s analyze what happened.

You...

1. made a commitment
Before I tell you the answer, let’s analyze what happened.

You...

1. made a commitment
2. externalized your answer
Before I tell you the answer, let’s analyze what happened.

You…

1. made a commitment
2. externalized your answer
3. moved from the answer/fact to reasoning
Before I tell you the answer, let’s analyze what happened.

You…

1. made a commitment
2. externalized your answer
3. moved from the answer/fact to reasoning
4. became emotionally invested in the learning process
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.
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.
consider atoms at rim of hole
consider atoms at rim of hole
consider atoms at rim of hole
consider atoms at rim of hole
consider atoms at rim of hole

you won't forget this
Higher learning gains
in a lecture, students...
in a lecture, students...

1. don’t pay utmost attention
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
in a lecture, students...

1. don’t pay utmost attention
2. think they know it
3. are not confronted with misconceptions
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!
With a simple change, Peer Instruction...

- teaches *real* problem solving
- encourages risk taking
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for a copy of this presentation:

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