

The Tyranny of the Lecture: Confessions of a converted lecturer



Enrico Fermi Colloquium
Universitá di Firenze – LENS
Firenze, Italia, 19 luglio 2013



The Tyranny of the Lecture: Confessions of a converted lecturer



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1 education

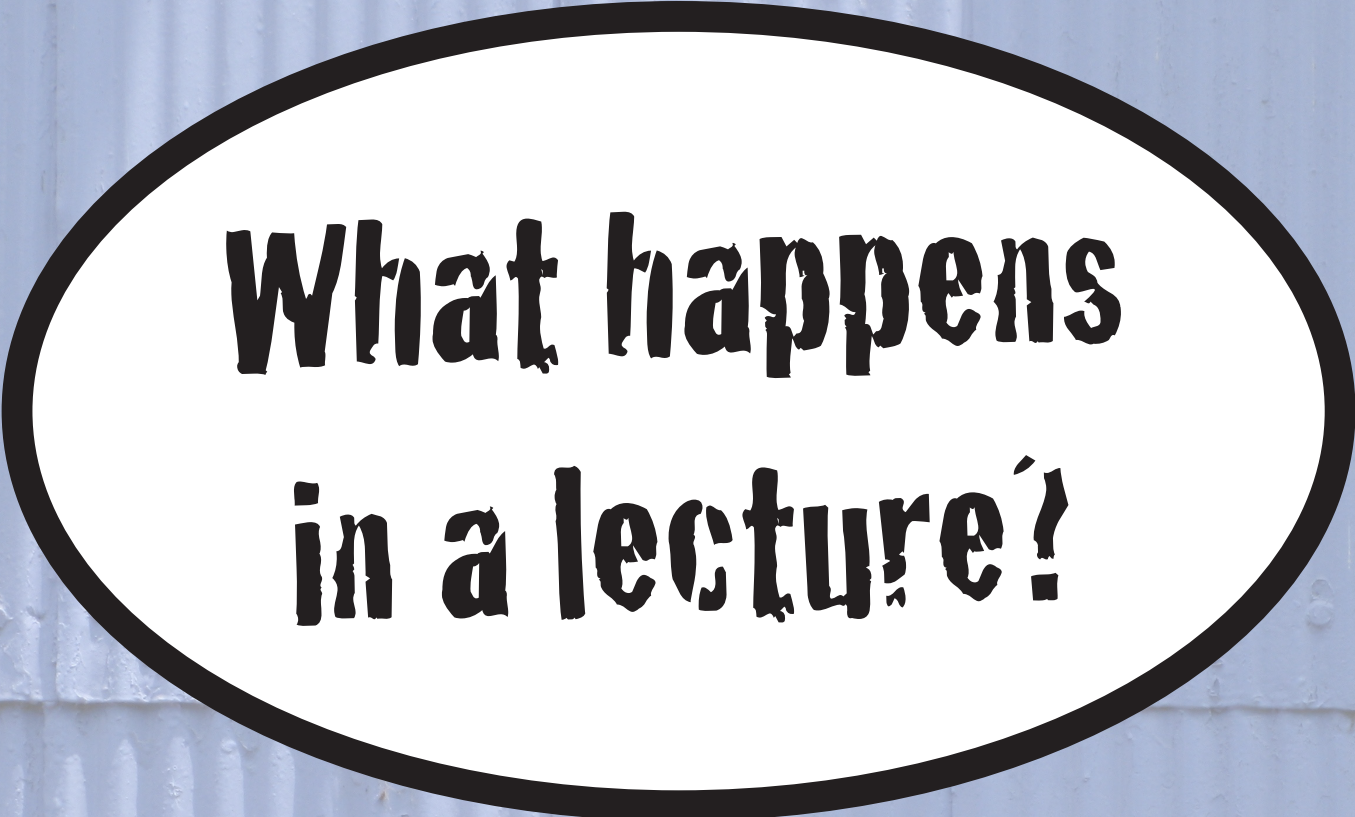
2 PI



1 education

2 PI

3 results

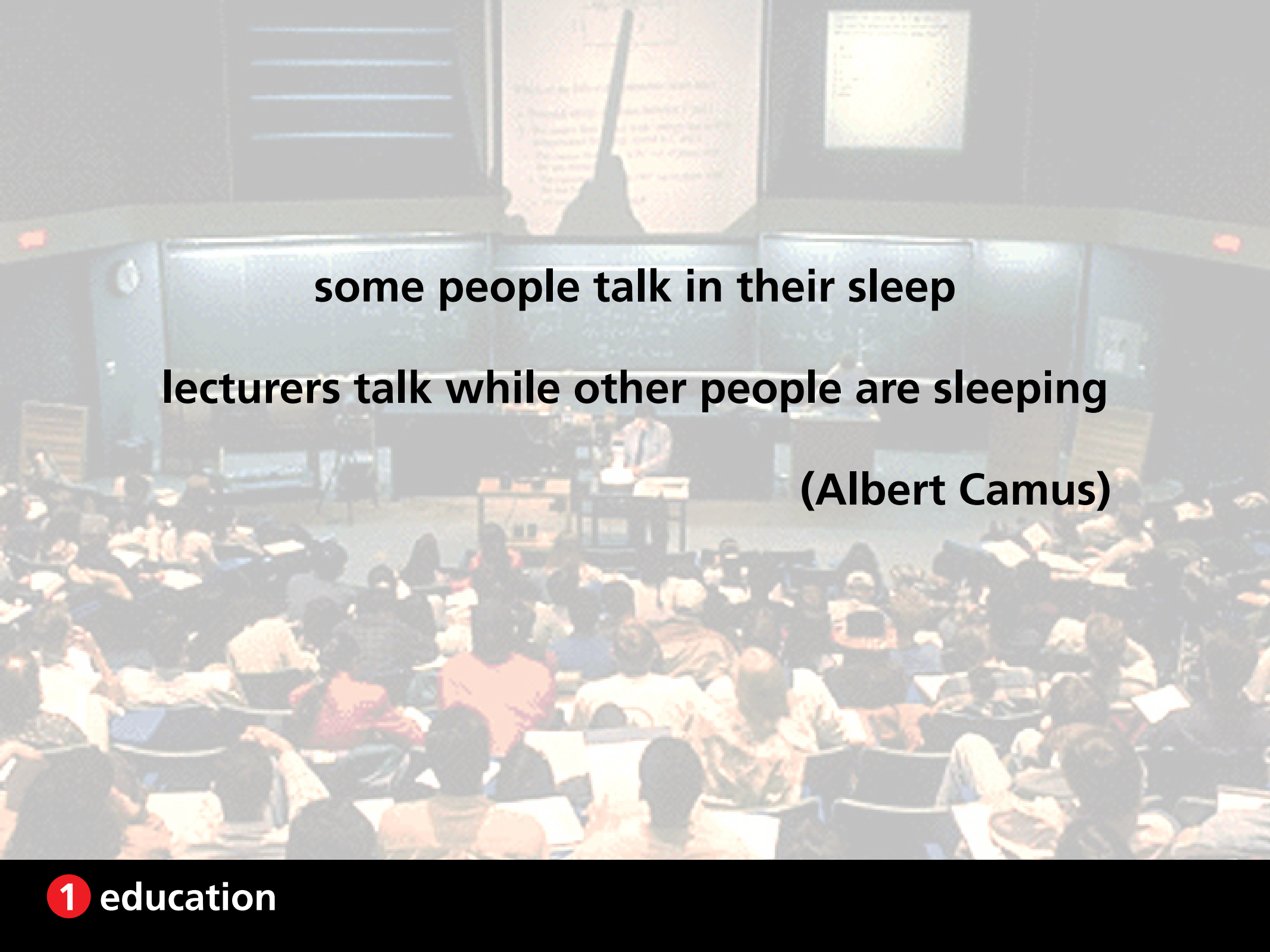
A large white thought bubble with a thick black border is centered in the upper half of the image. It contains the text 'What happens in a lecture?'. Below the main bubble are three smaller white circles with black borders, arranged in a descending staircase pattern from left to right, leading the eye up to the main bubble.

**What happens
in a lecture?**



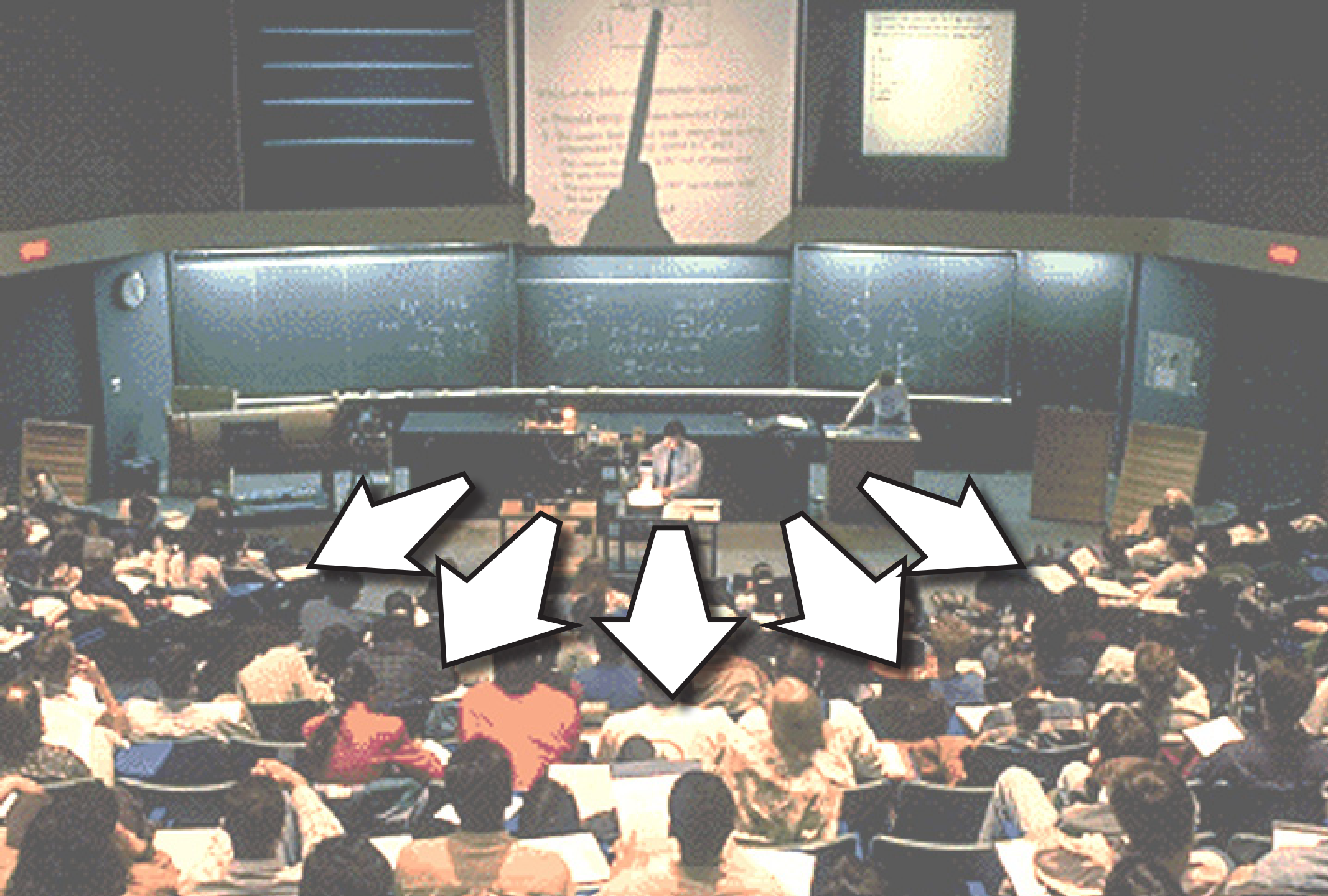
A large lecture hall with students seated at desks, facing a stage where a lecturer is standing. The room has a curved wall and a large screen displaying text. The text "some people talk in their sleep" is overlaid on the image.

some people talk in their sleep



some people talk in their sleep
lecturers talk while other people are sleeping
(Albert Camus)





The result?

EDUCACION

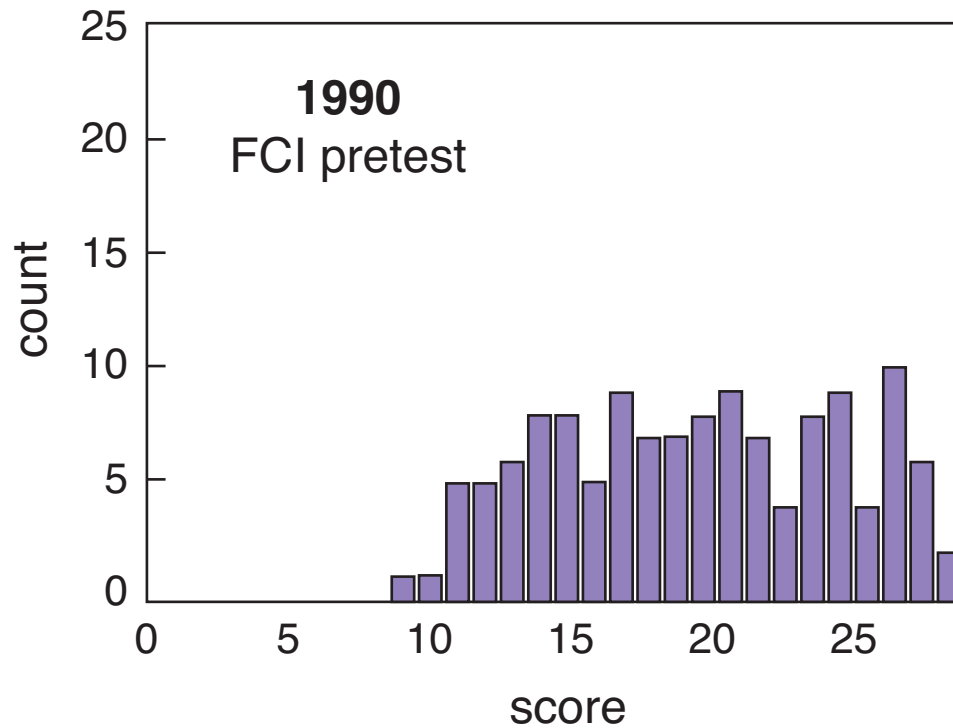
Lack of learning

EDUCACION

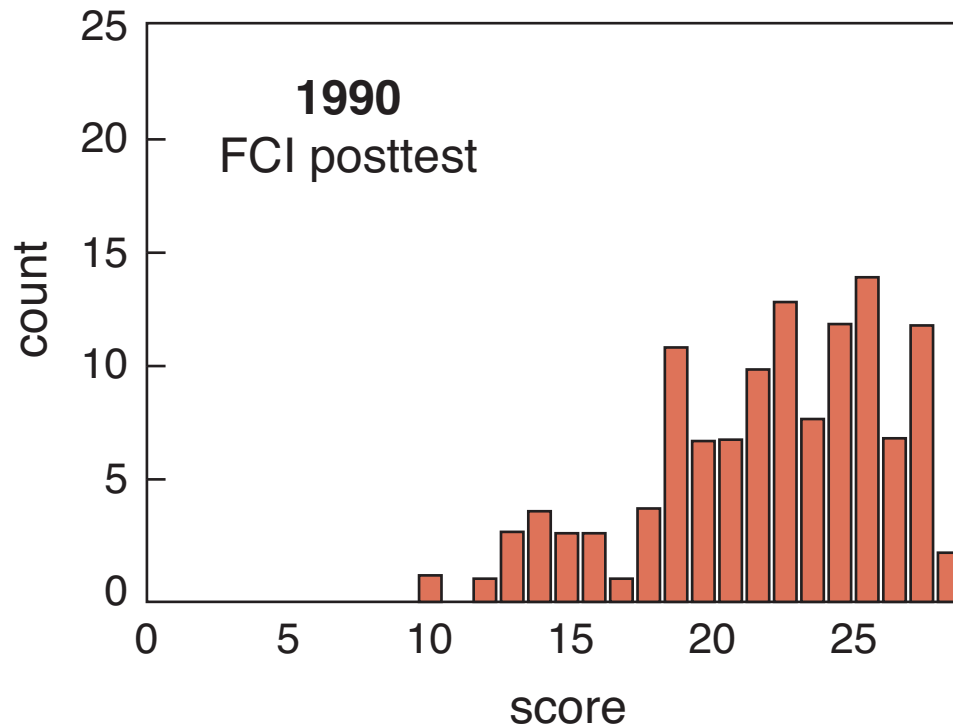
Lack of learning

Lack of retention

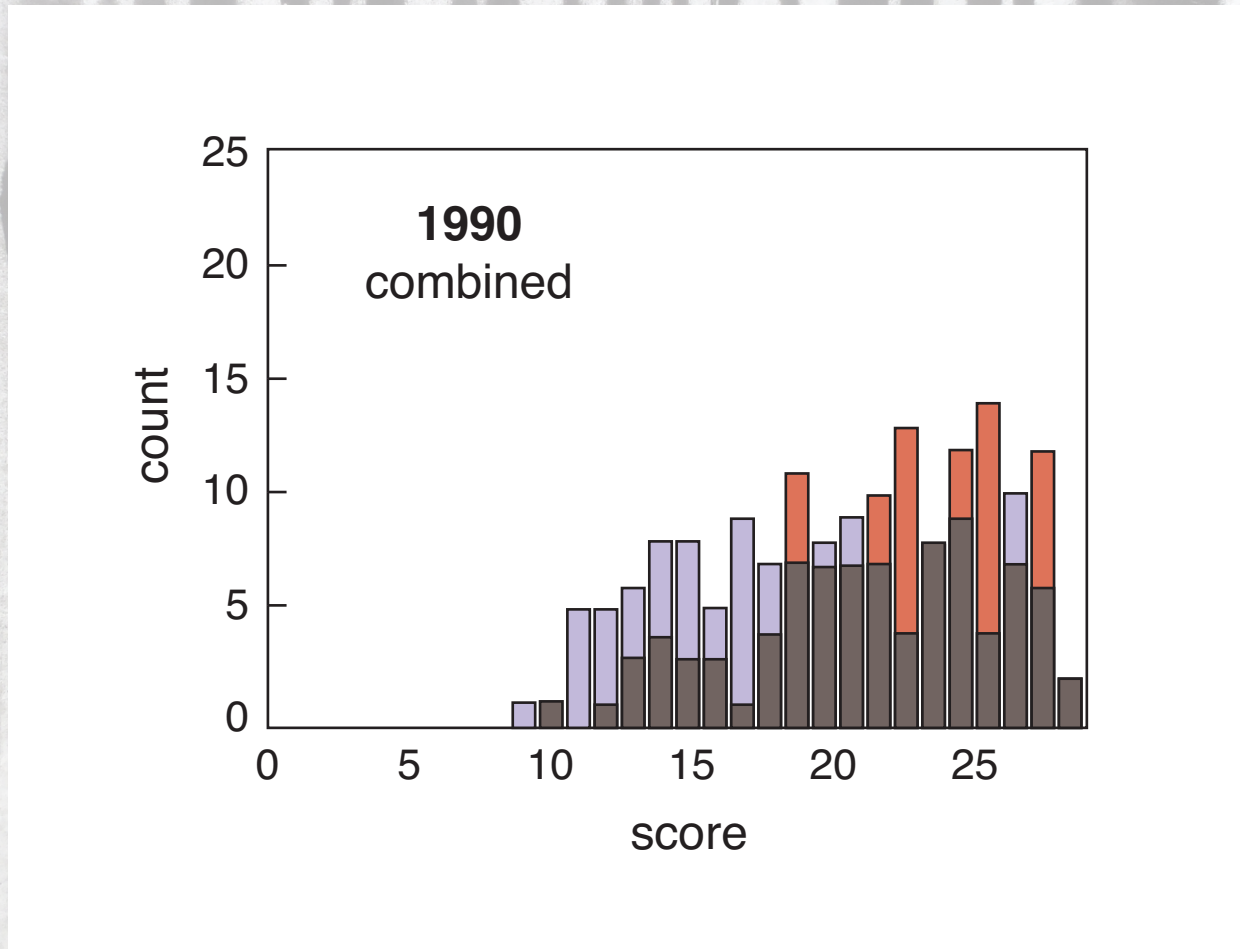
education is not just information transfer

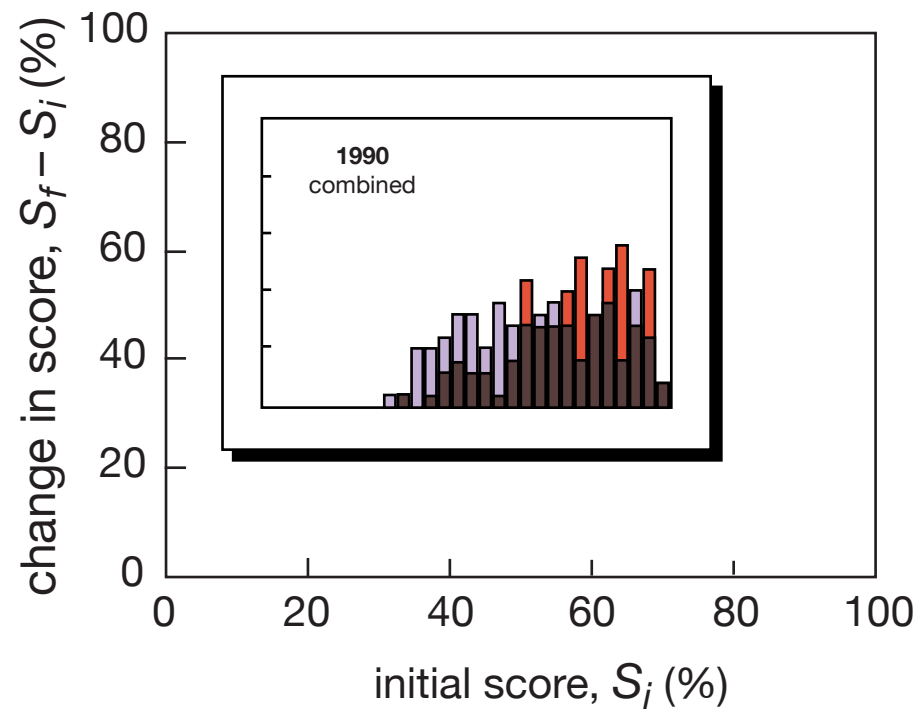


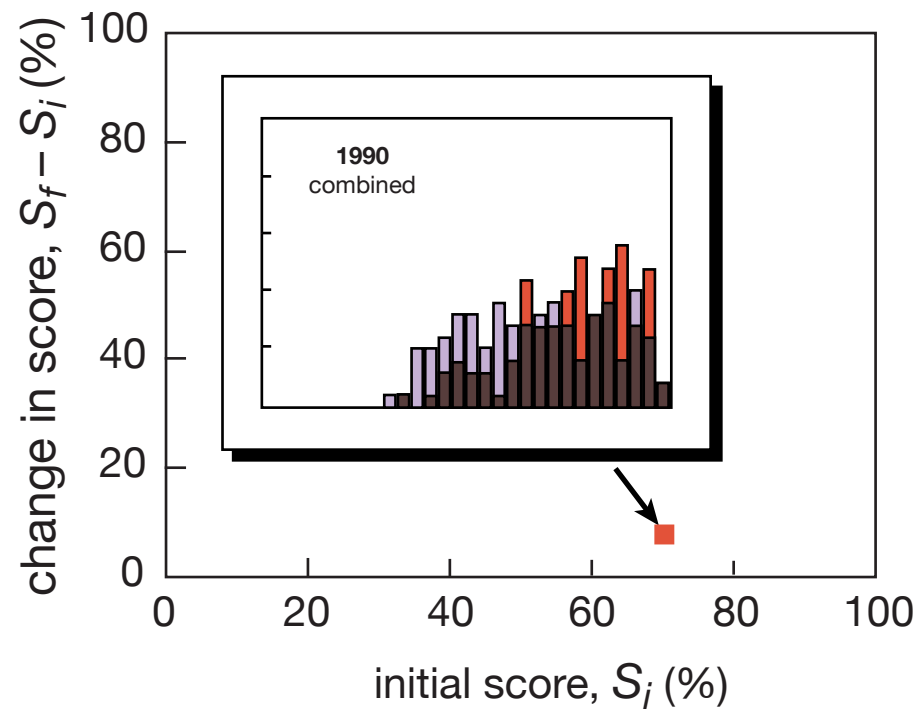
education is not just information transfer

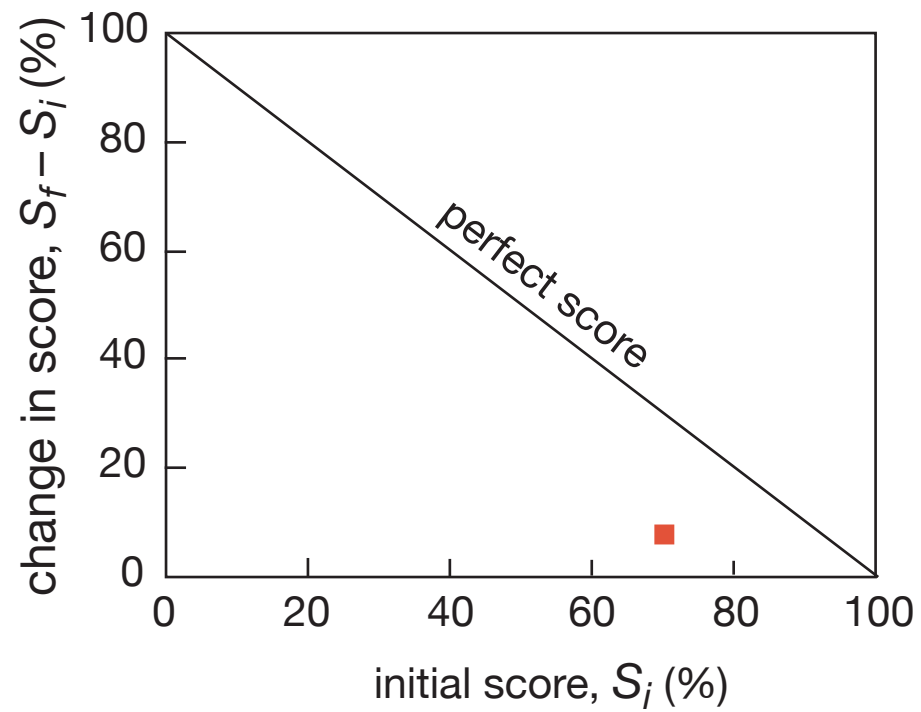


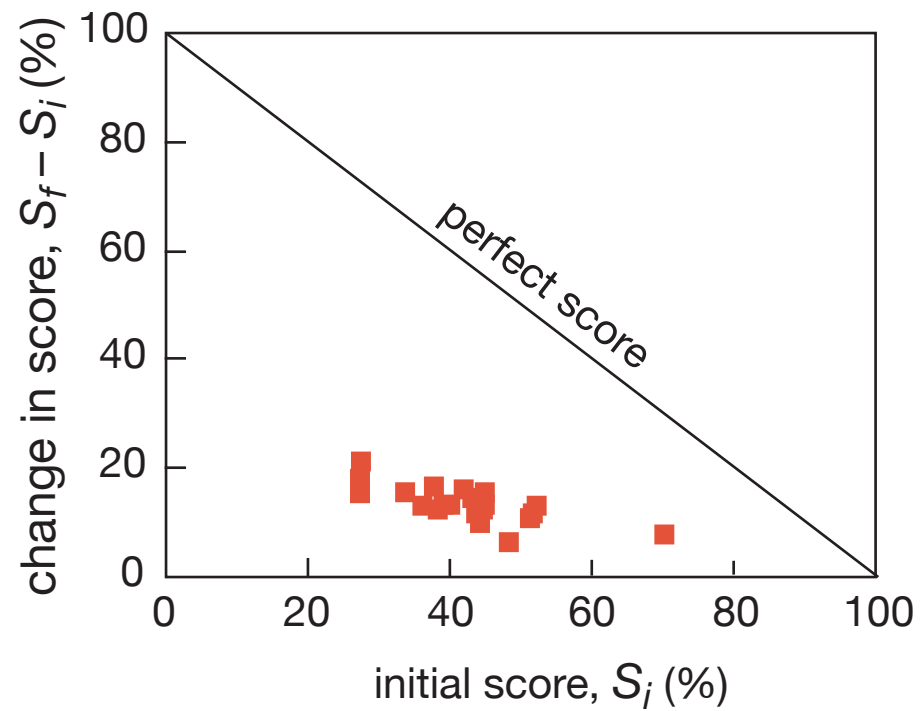
education is not just information transfer





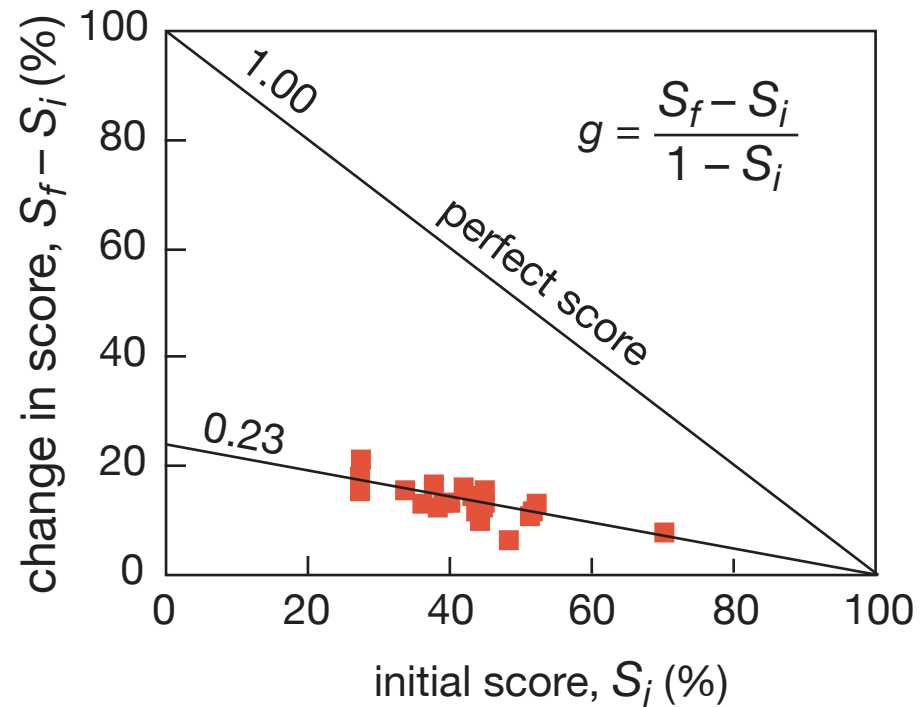






R.R. Hake, *Am. J. Phys.* 66, 64 (1998)

only one quarter of maximum gain realized



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

not transfer but assimilation of information is key

EDUCACION





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 (in class)

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)

Peer



1. transfer of information (out of class)

2. assimilation of that information (in class)

INSTRUCTION

question

1 education

2 PI

question



think

question



think



poll

question



think



poll



discuss

question



think



poll



discuss



repoll

question



think



poll



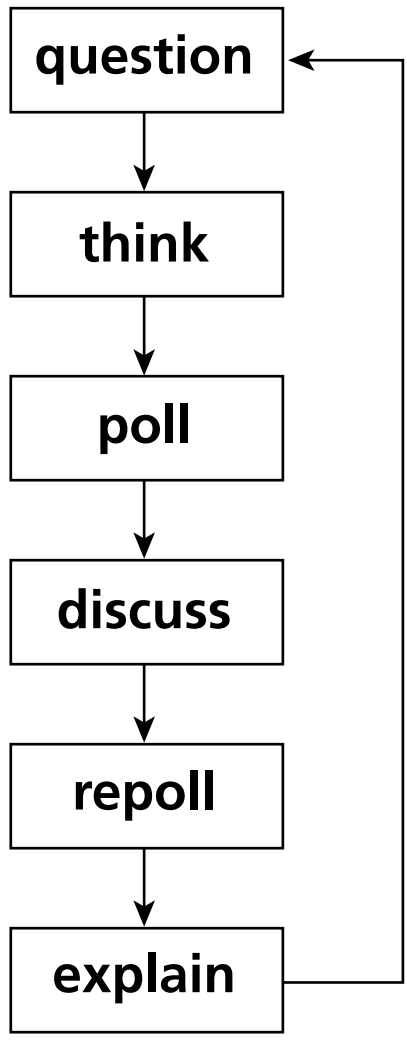
discuss

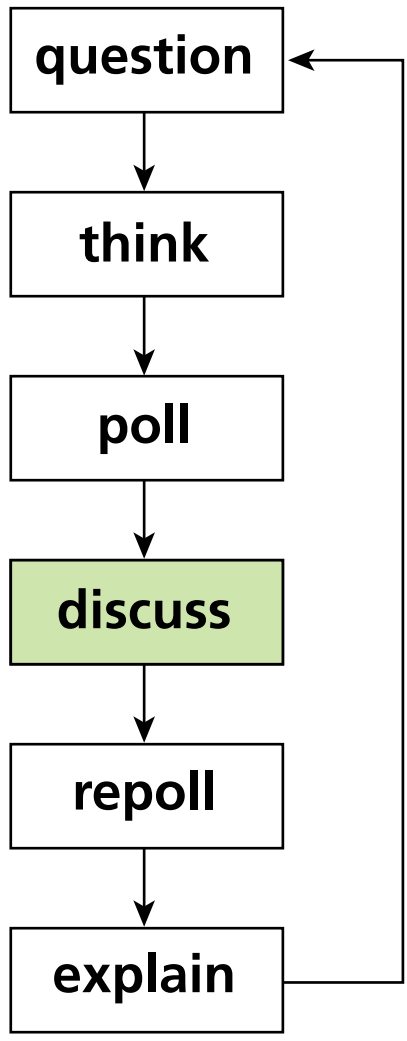


repoll



explain





1 education

2 PI

Peer

is it any good?

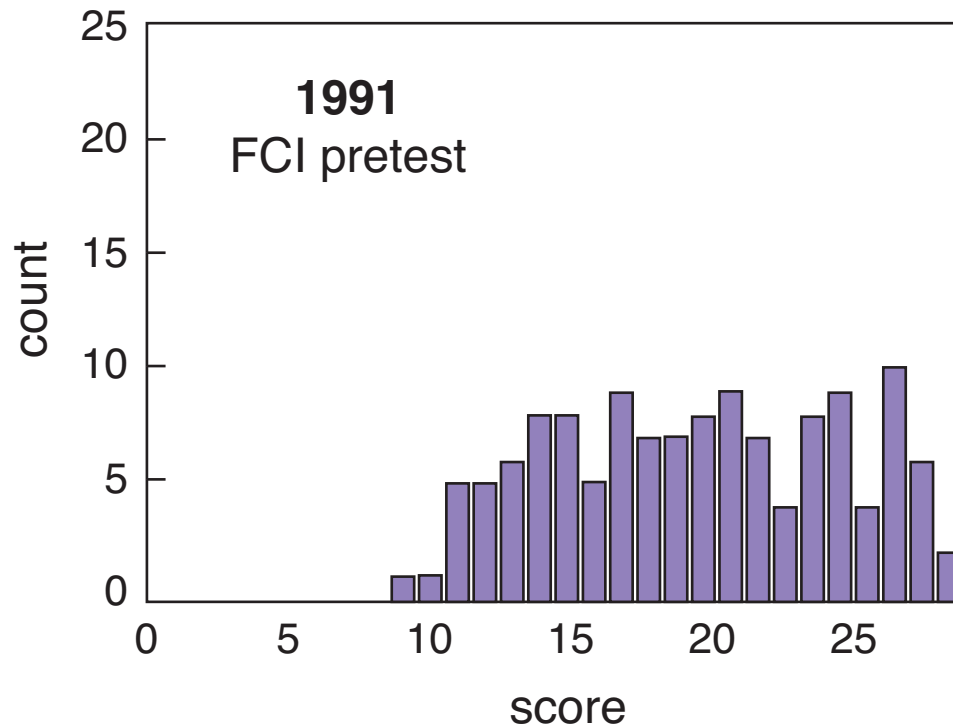
INSTRUCTION

1 education

2 PI

3 results

first year of implementing PI

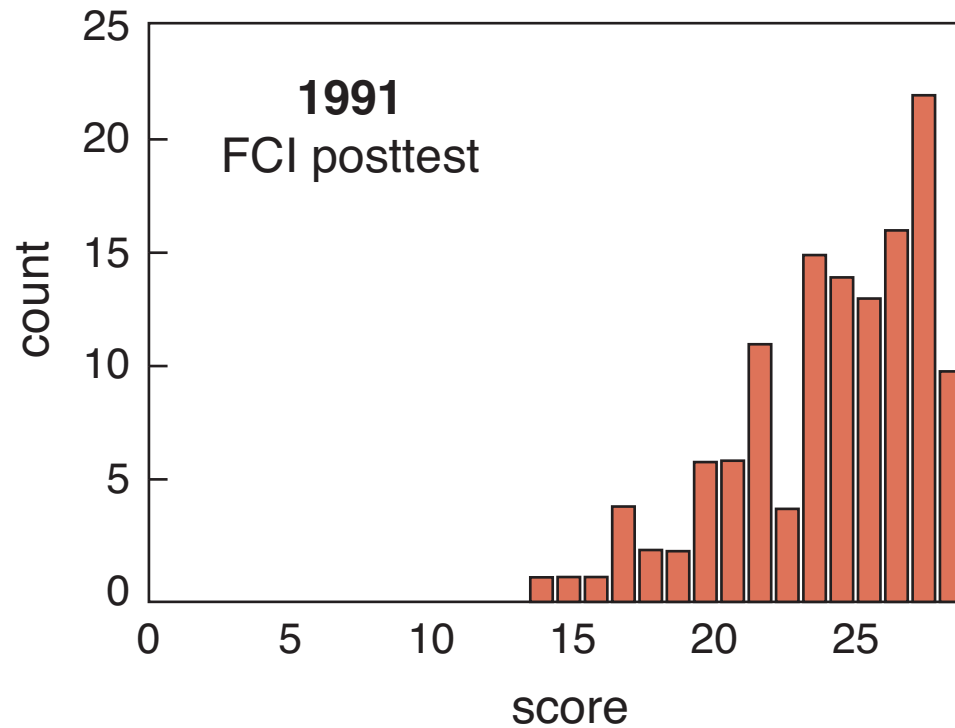


1 education

2 PI

3 results

first year of implementing PI

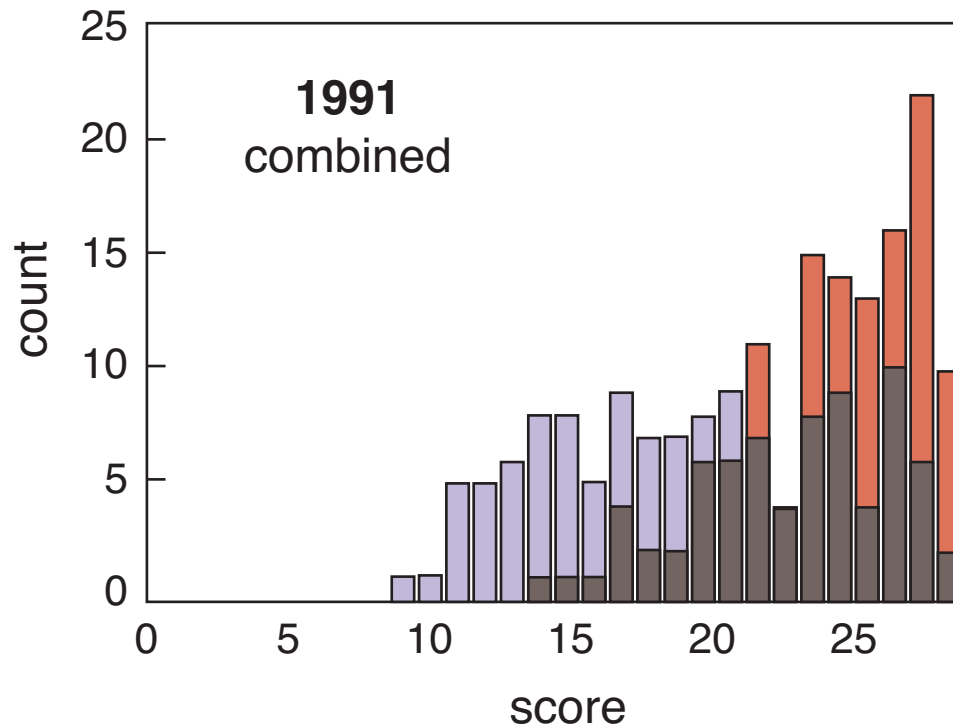


1 education

2 PI

3 results

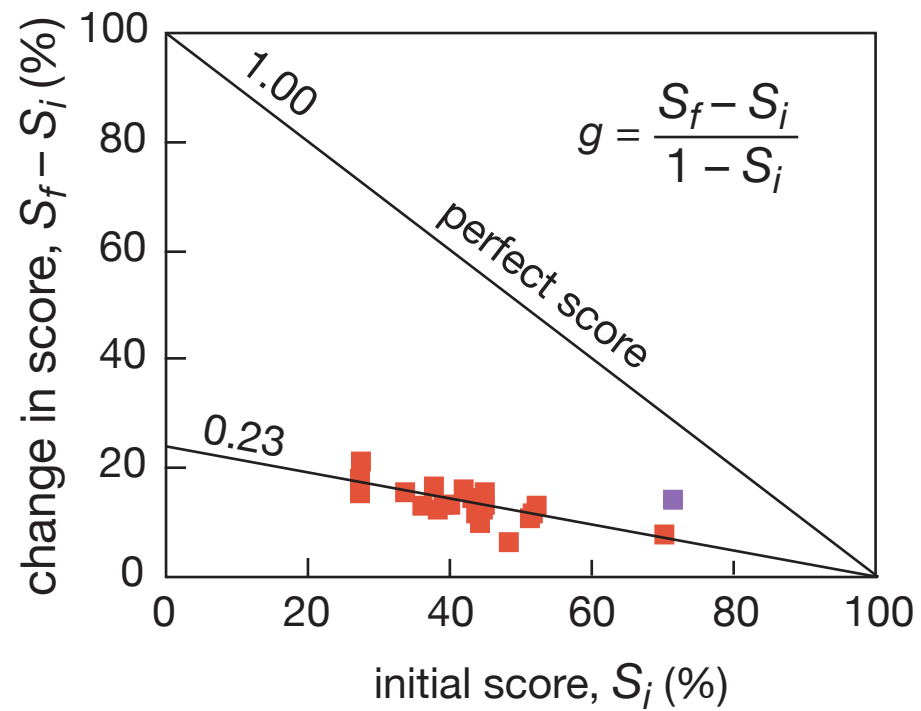
first year of implementing PI



1 education

2 PI

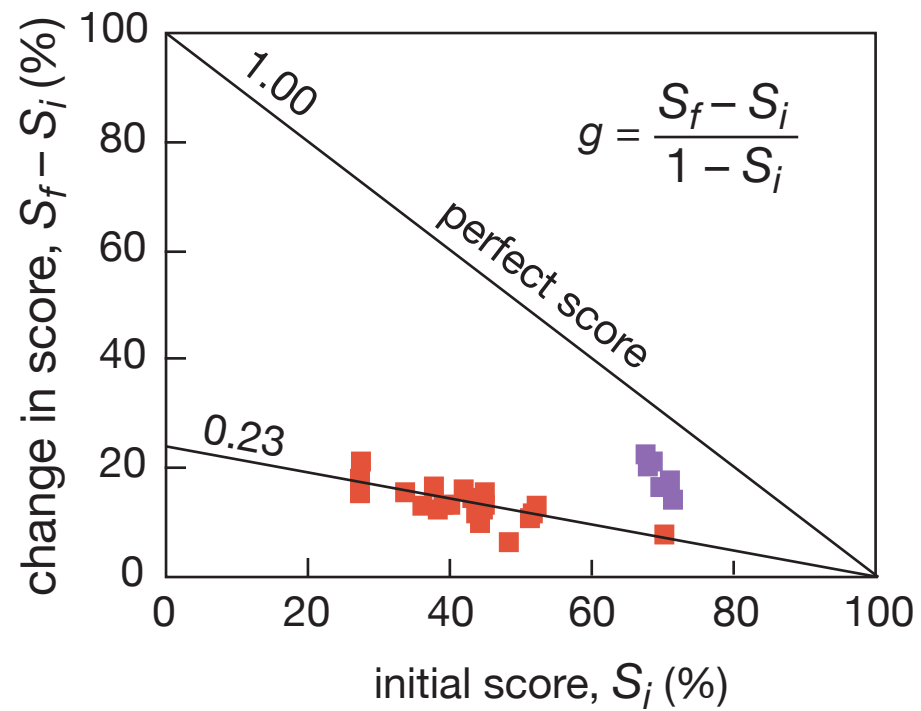
3 results



1 education

2 PI

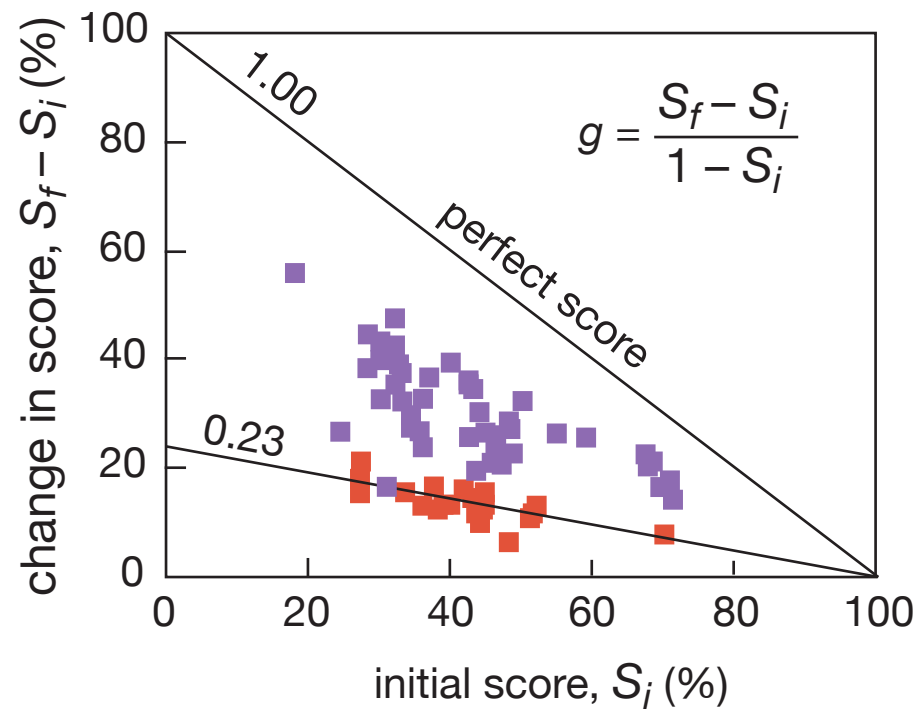
3 results



1 education

2 PI

3 results

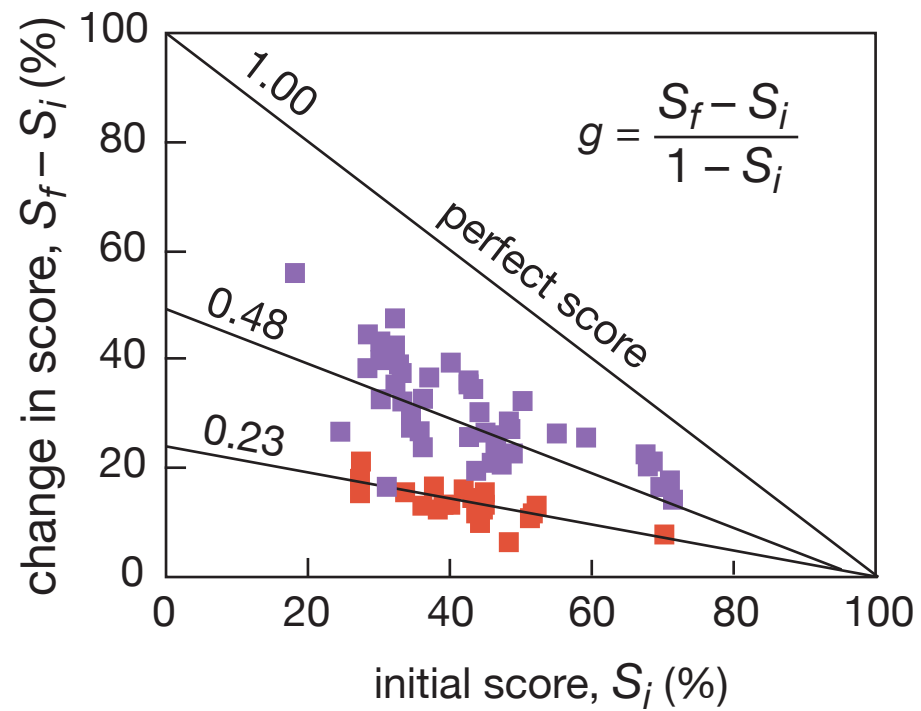


R.R. Hake, *Am. J. Phys.* 66, 64 (1998)

1 education

2 PI

3 results



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

1 education

2 PI

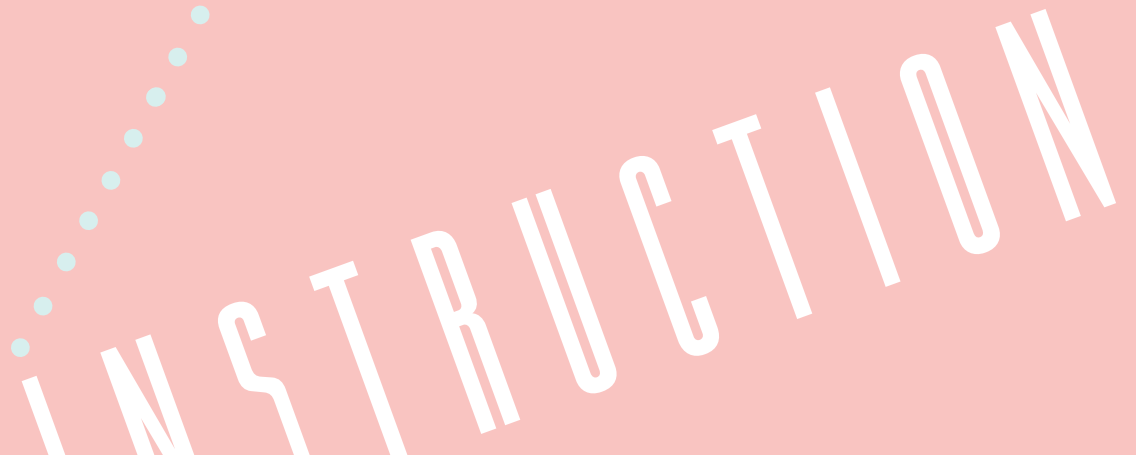
3 results



Peer

The word 'Peer' is rendered in a large, white, sans-serif font with a light blue outline. The first 'e' is circled by a dashed yellow line with an arrow pointing clockwise. A dotted blue line starts from the top right of the second 'e' and curves downwards and to the left, ending with a yellow arrowhead pointing towards the first 'e'.

what about problem solving?



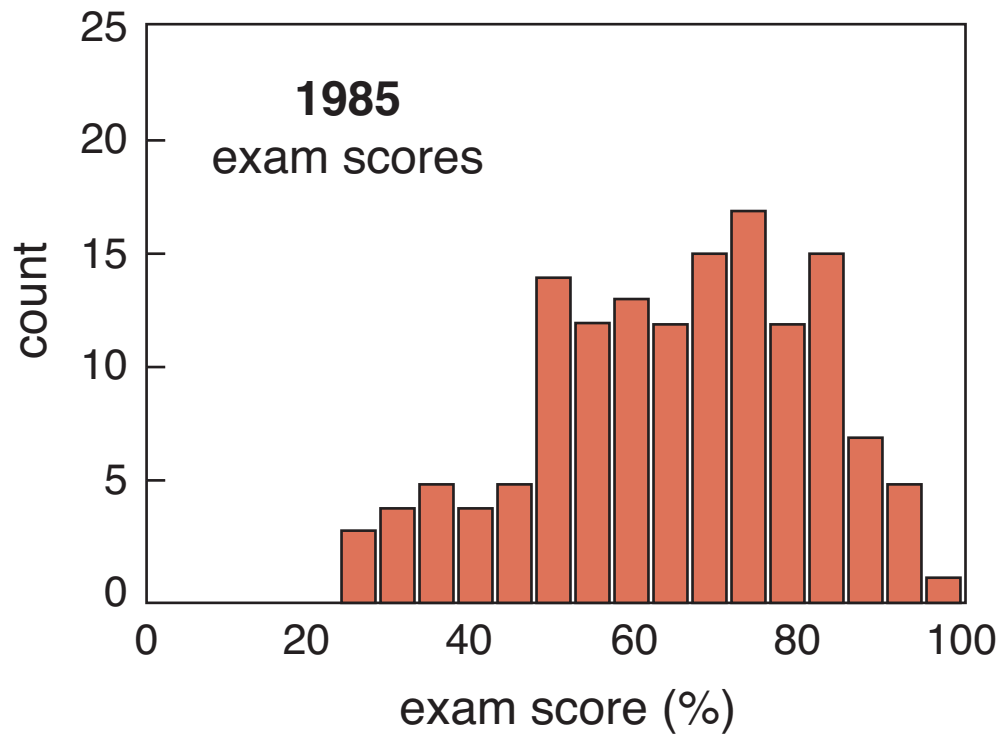
INSTRUCTION

The word 'INSTRUCTION' is written in a white, sans-serif font, slanted upwards from left to right. A dotted blue line starts from the bottom left of the word and curves upwards and to the right, ending with a yellow arrowhead pointing towards the top right of the word.

1 education

2 PI

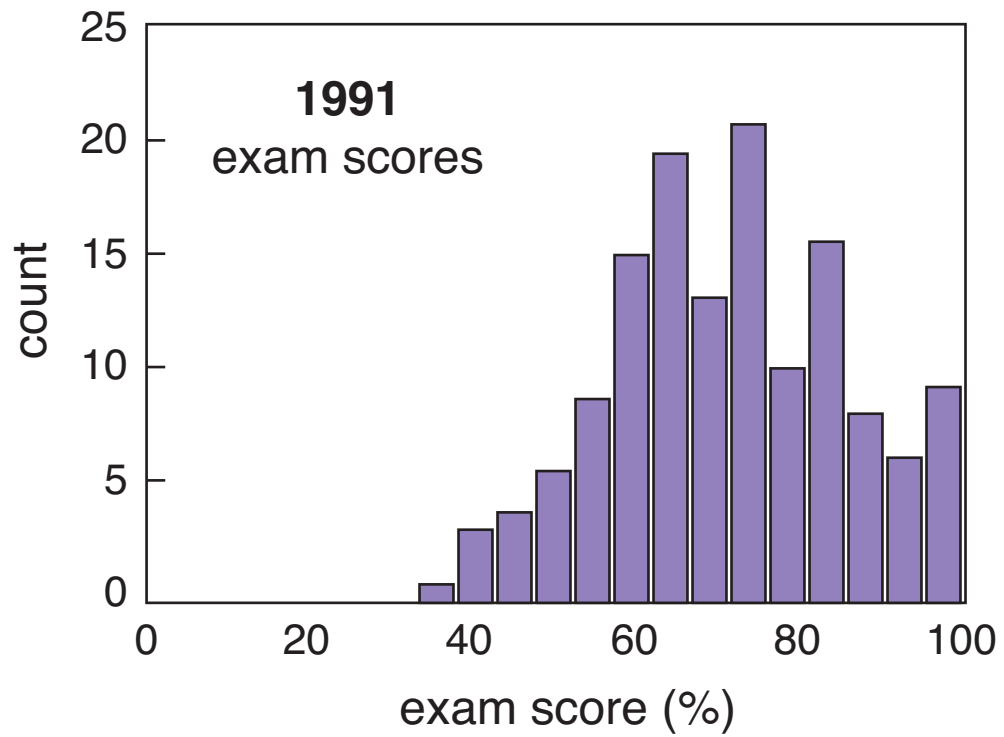
3 results



1 education

2 PI

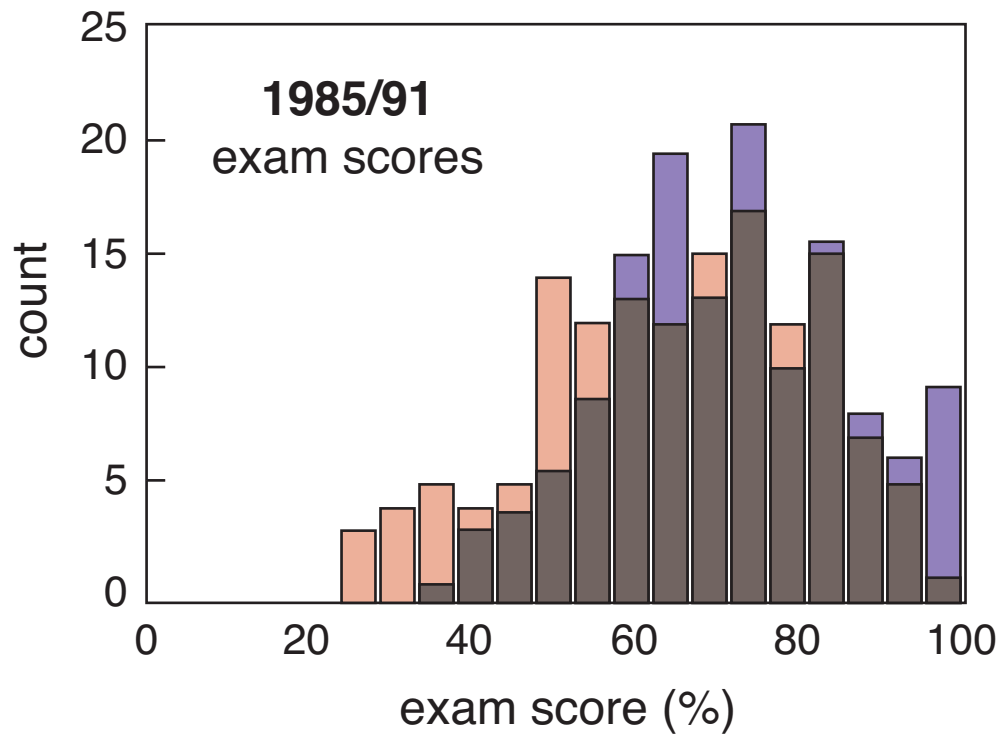
3 results



1 education

2 PI

3 results



1 education

2 PI

3 results

So better understanding leads to better problem solving!

INSTRUCTION

1 education

2 PI

3 results

So better understanding leads to better problem solving!

(but “good” problem solving doesn’t always indicate understanding!)

INSTRUCTION

1 education

2 PI

3 results



1 education

2 PI

3 results

in a lecture, students...

1 education

2 PI

3 results

in a lecture, students...

1. don't pay utmost attention

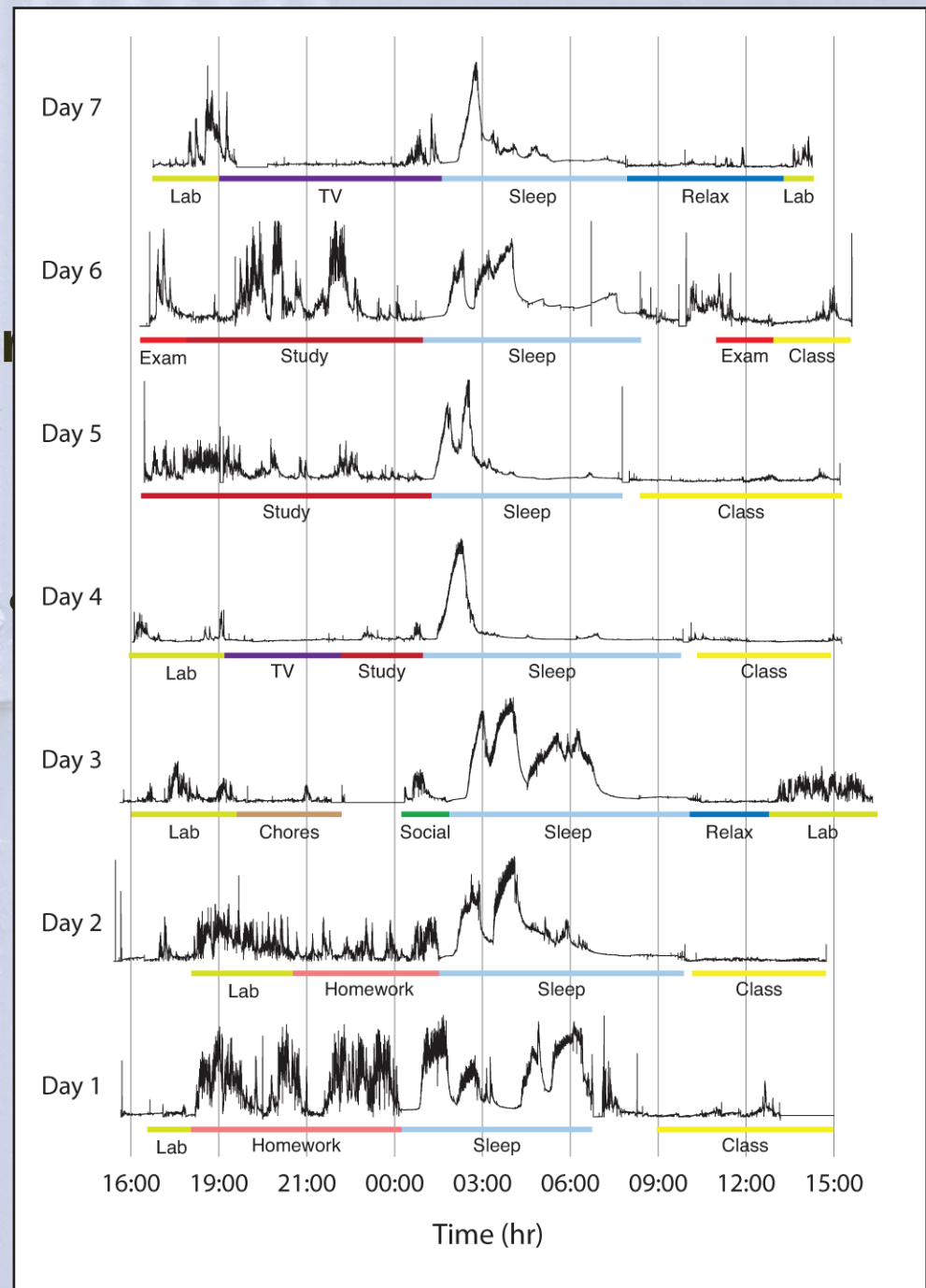
1 education

2 PI

3 results

in a lecture

1. don't pay utmost



doi: 10.1109/TBME.2009.2038487

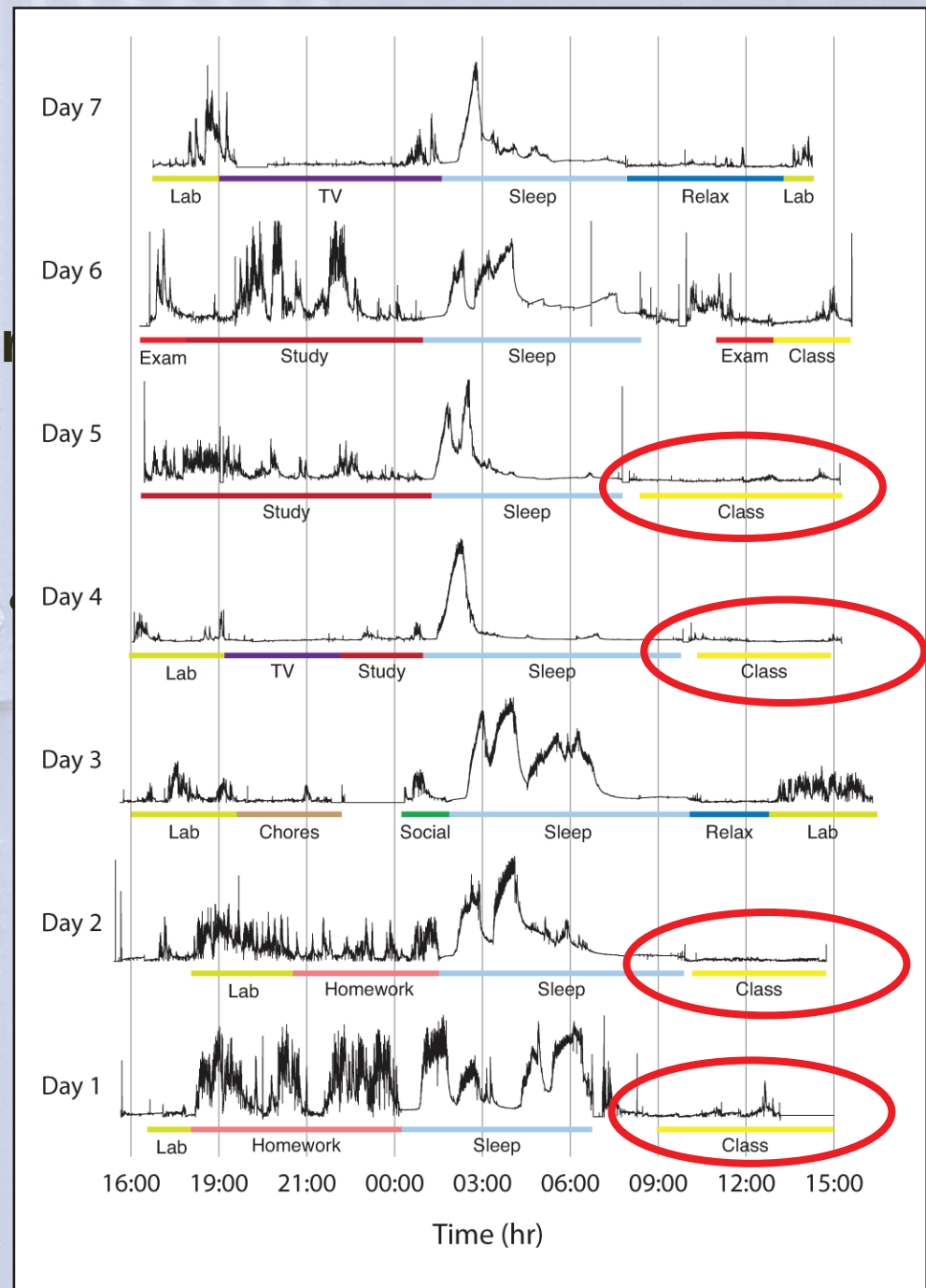
1 education

2 PI

3 results

in a lecture

1. don't pay utmost



doi: 10.1109/TBME.2009.2038487

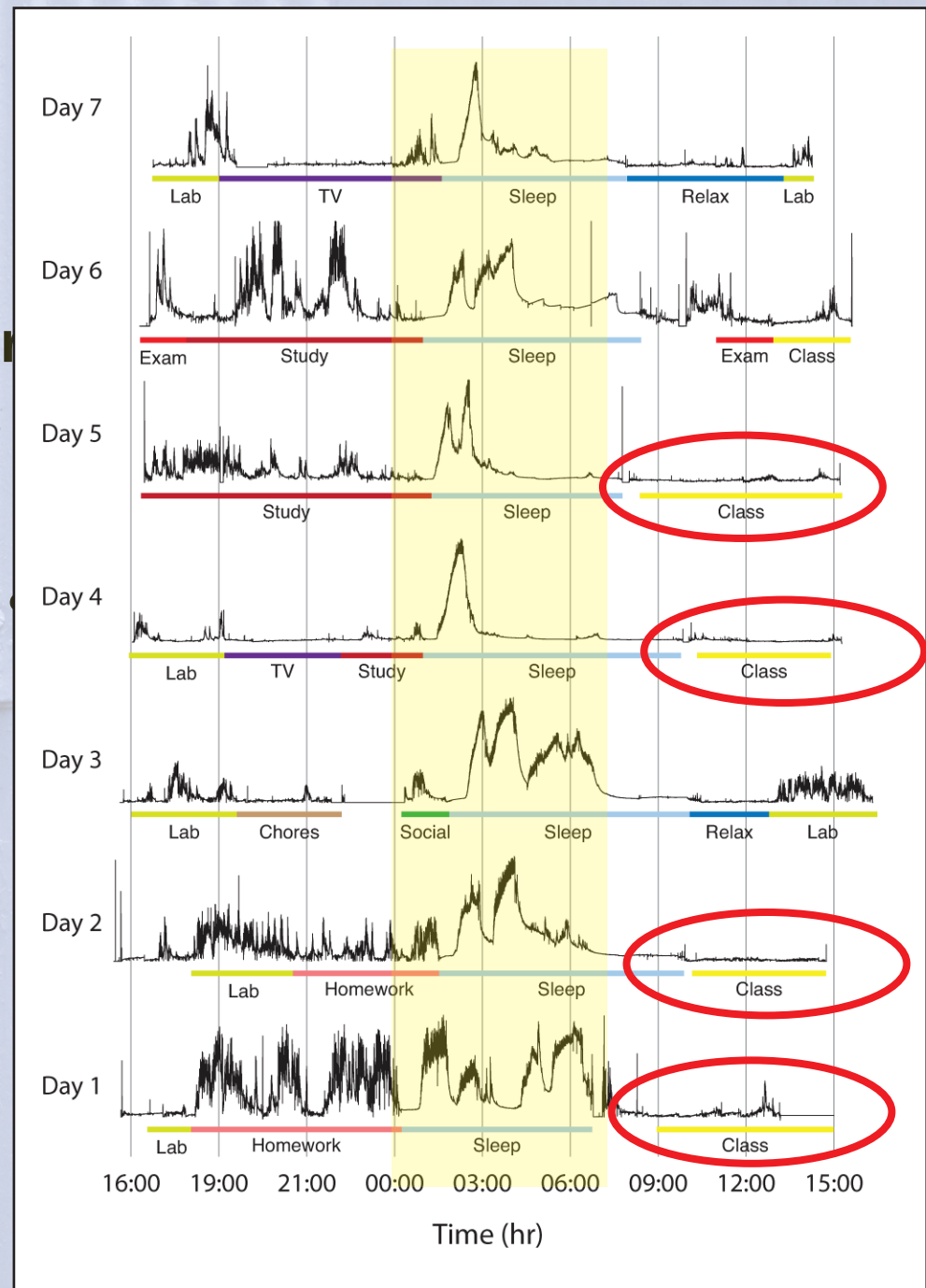
1 education

2 PI

3 results

in a lecture

1. don't pay utmost



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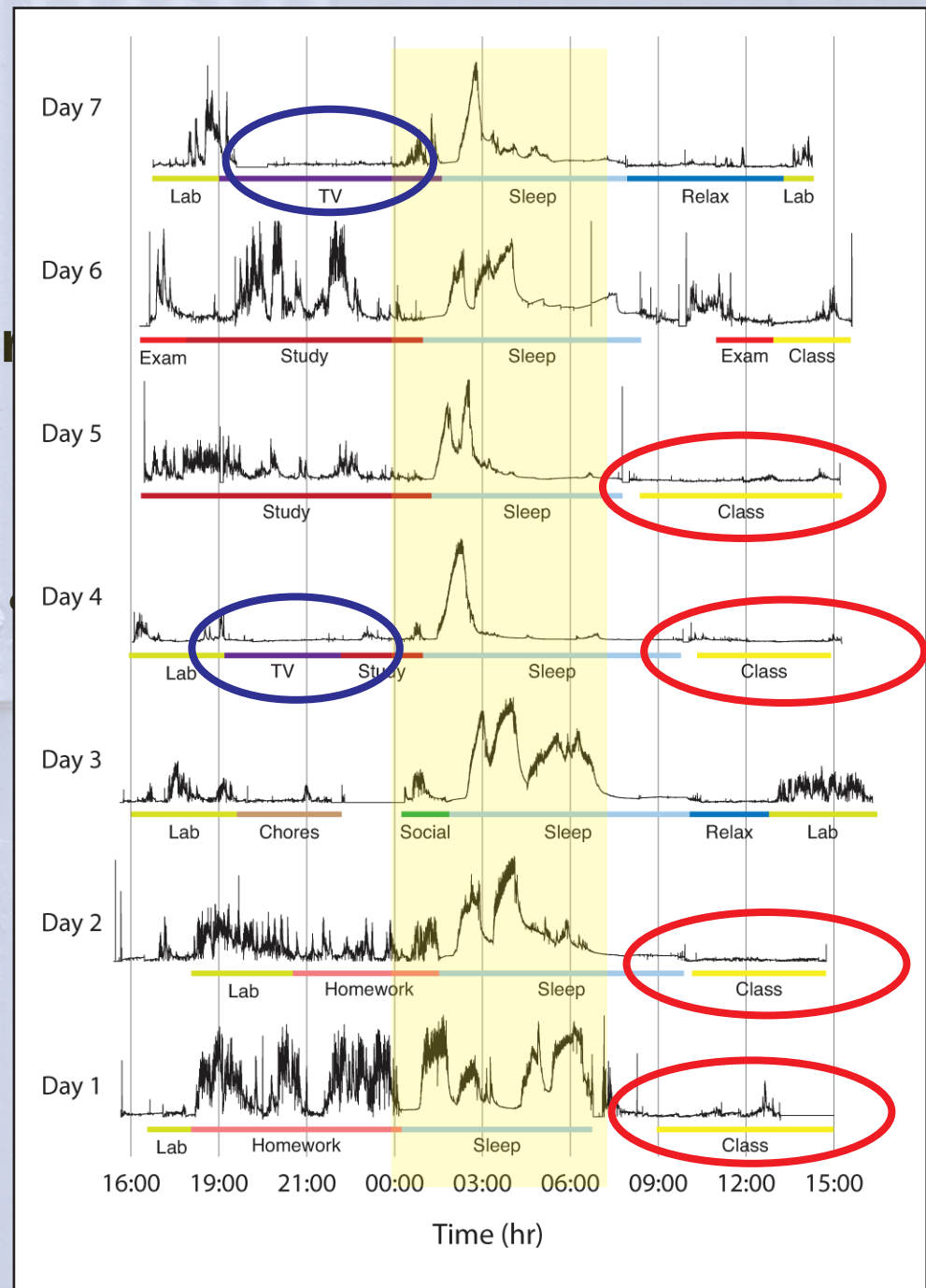
1 education

2 PI

3 results

in a lecture

1. don't pay utmost



doi: 10.1109/TBME.2009.2038487

1 education

2 PI

3 results

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

false
sense of security



1 education

2 PI

3 results



an illusion. . .

1 education

2 PI

3 results



Education is not just about:

- **transferring information**
- **getting students to do what we do**

1 education

2 PI

3 results



Education is not just about:

- **transferring information**
- **getting students to do what we do**

active participation a must!

1 education

2 PI

3 results

Funding:

National Science Foundation

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