

Assessment: The silent killer of innovation



Innovative Learning Conference
Nueva School
Hillsborough, CA, 18 October 2013



Assessment: The silent killer of innovation



@eric_mazur

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kosten

- 1. die Kosten (*pl.*)
- 2. kostbar
- 3. ...lich

455

krank

- 1. die Krankheit, —, —en

COW

377

magnificent
glor

- 1. magnifice
- 2. master

430

das Kind, —(e)s, —er

- 1. kindisch
- 2. kindlich

der Kellner, —s, —

- 1. der Keller, —s, —

kennen *irreg.*

- 1. kannte-gekant
- 2. kennen-lernen
- 3. erkennen
- 4. bekannt
- 5. der Bekannte (*adj. as n.*)

107

outh

erba

vet!

kosten

1. die Kosten (*pl.*)
2. kostbar

krank

die Krankheit, —, —en

kennen

1. kannte-gekant
2. erkennen
3. bekannt
4. der Bekannte (*adj. as n.*)

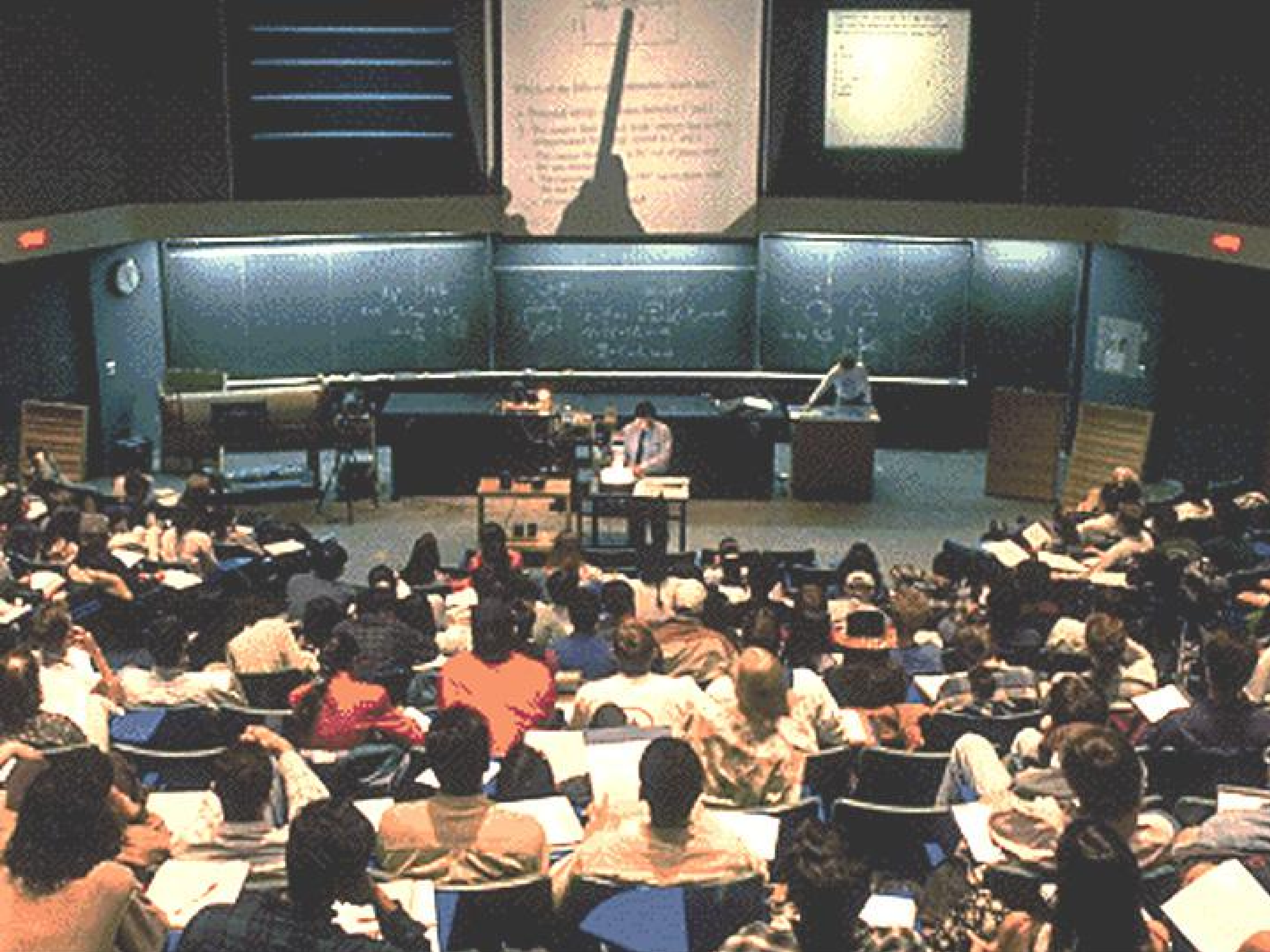


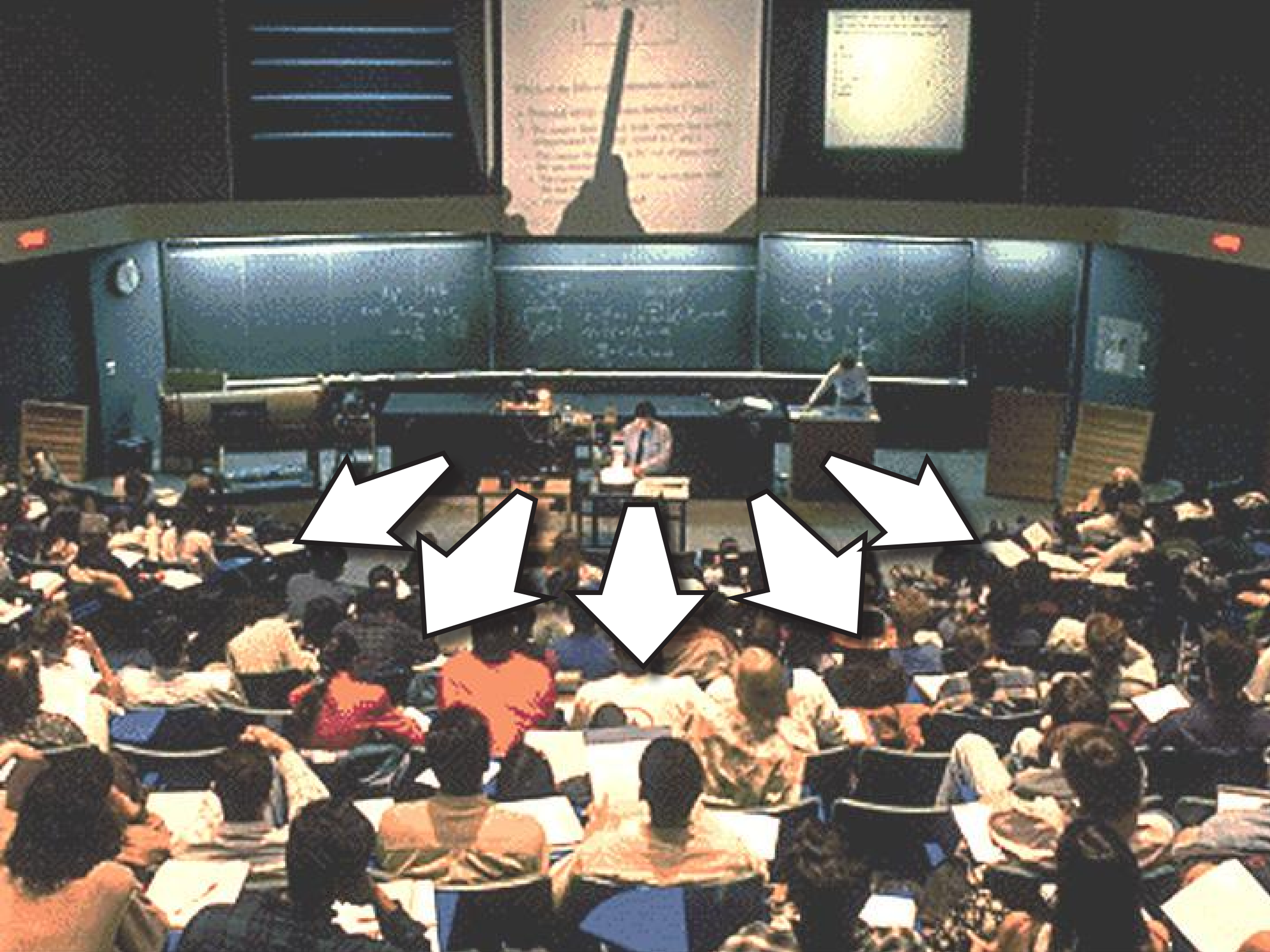
**we only guarantee
they'll pass the test**





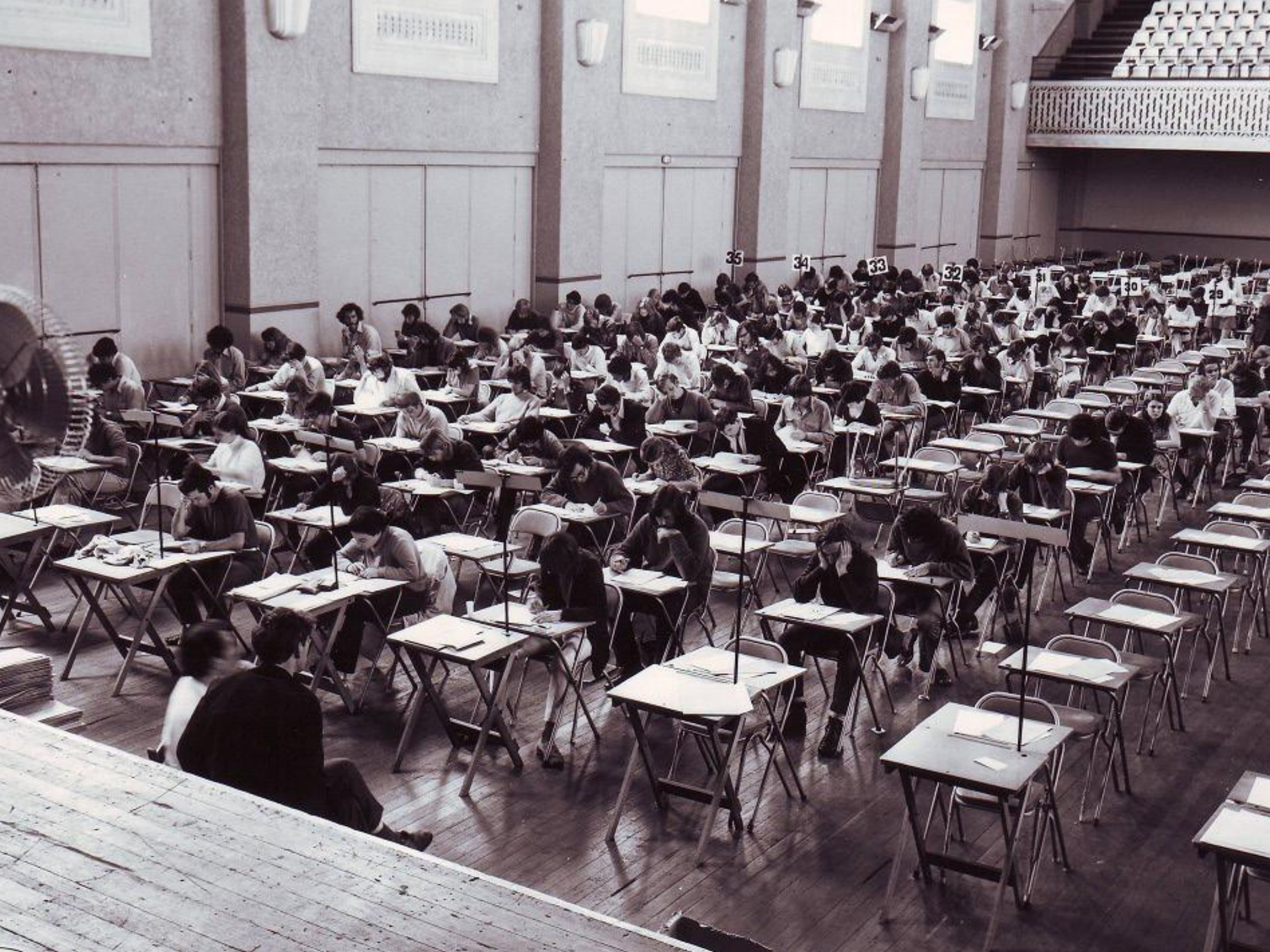
5-minute university






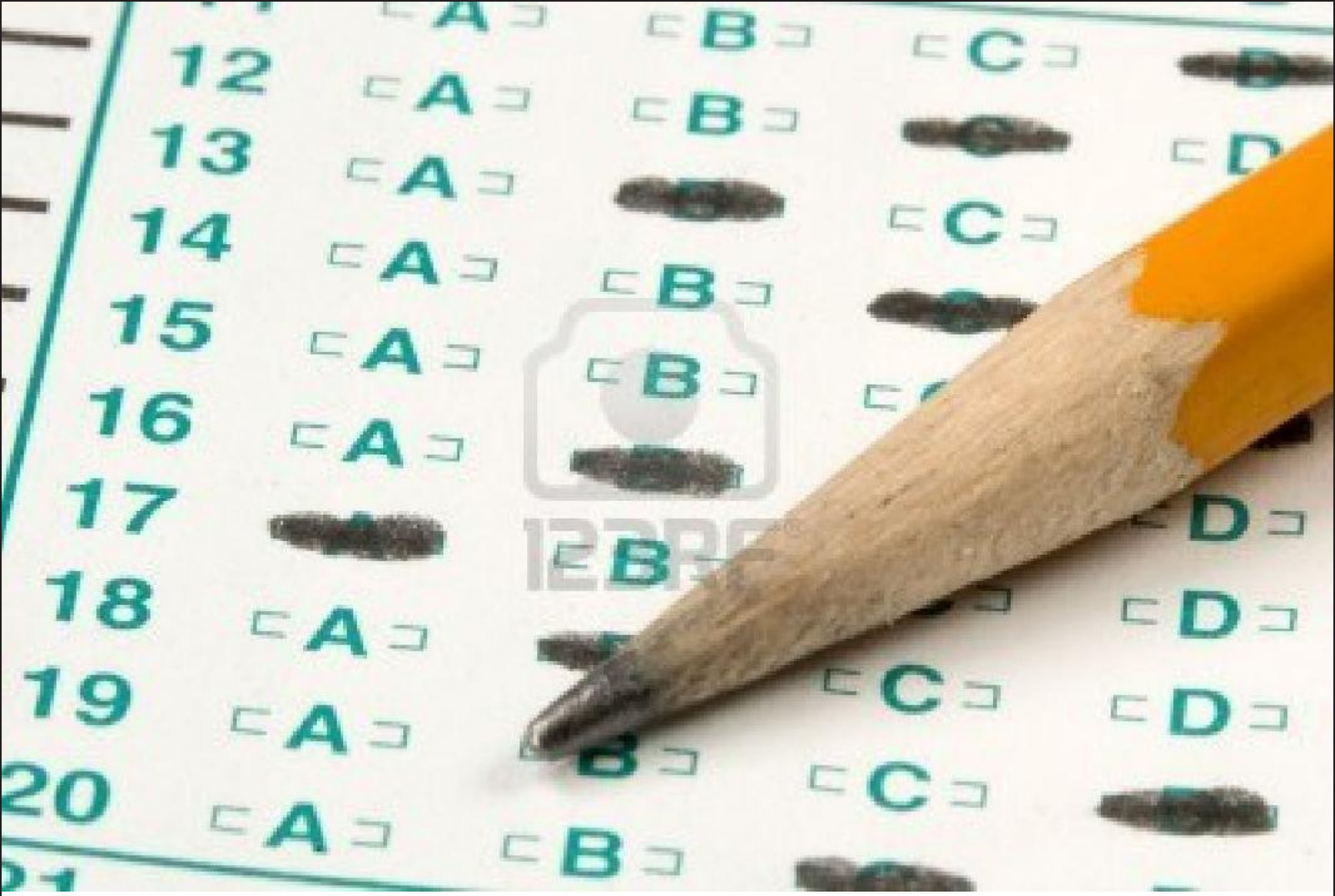




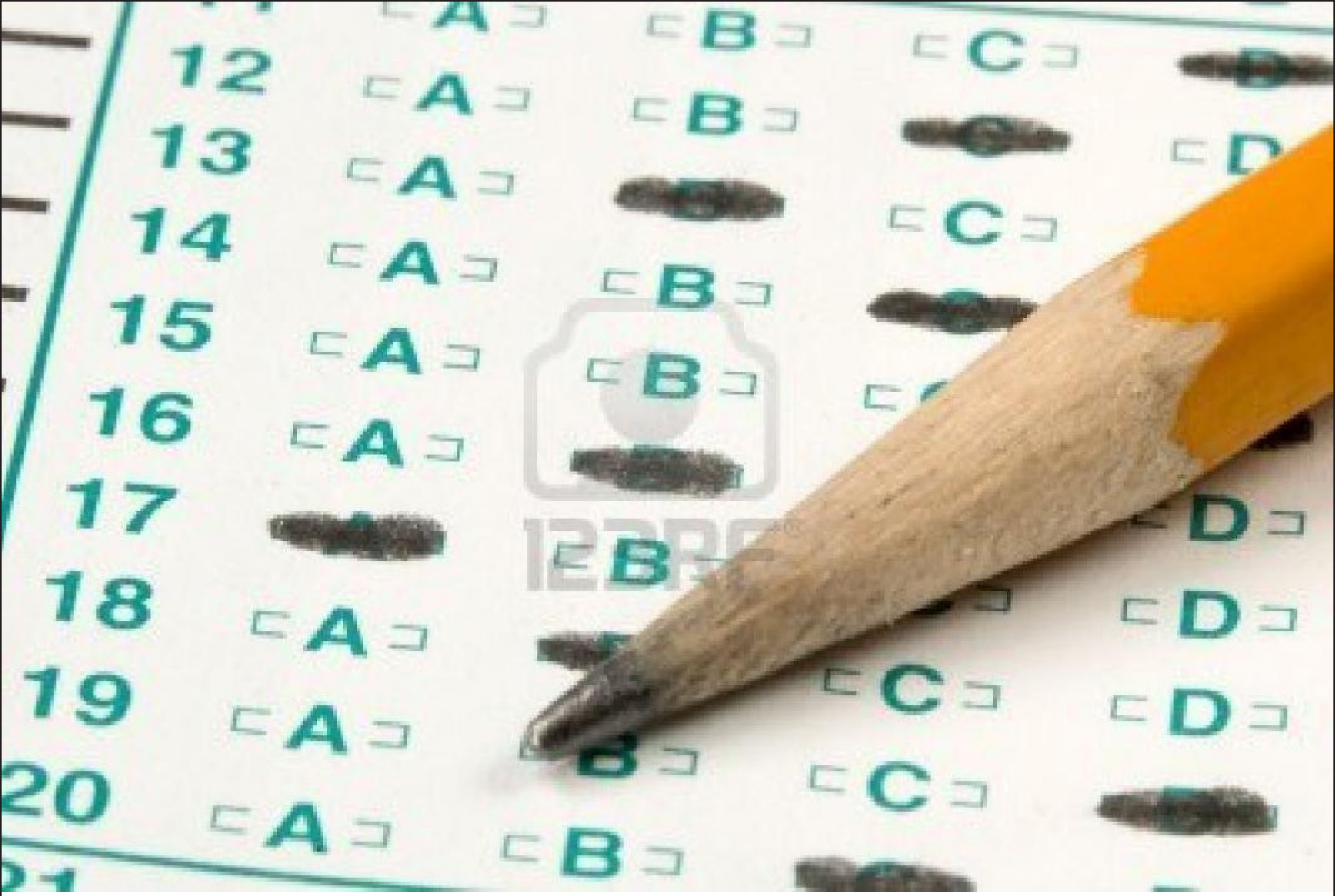




**assessment focussed on ranking and classifying,
not on developing 21st century skills**

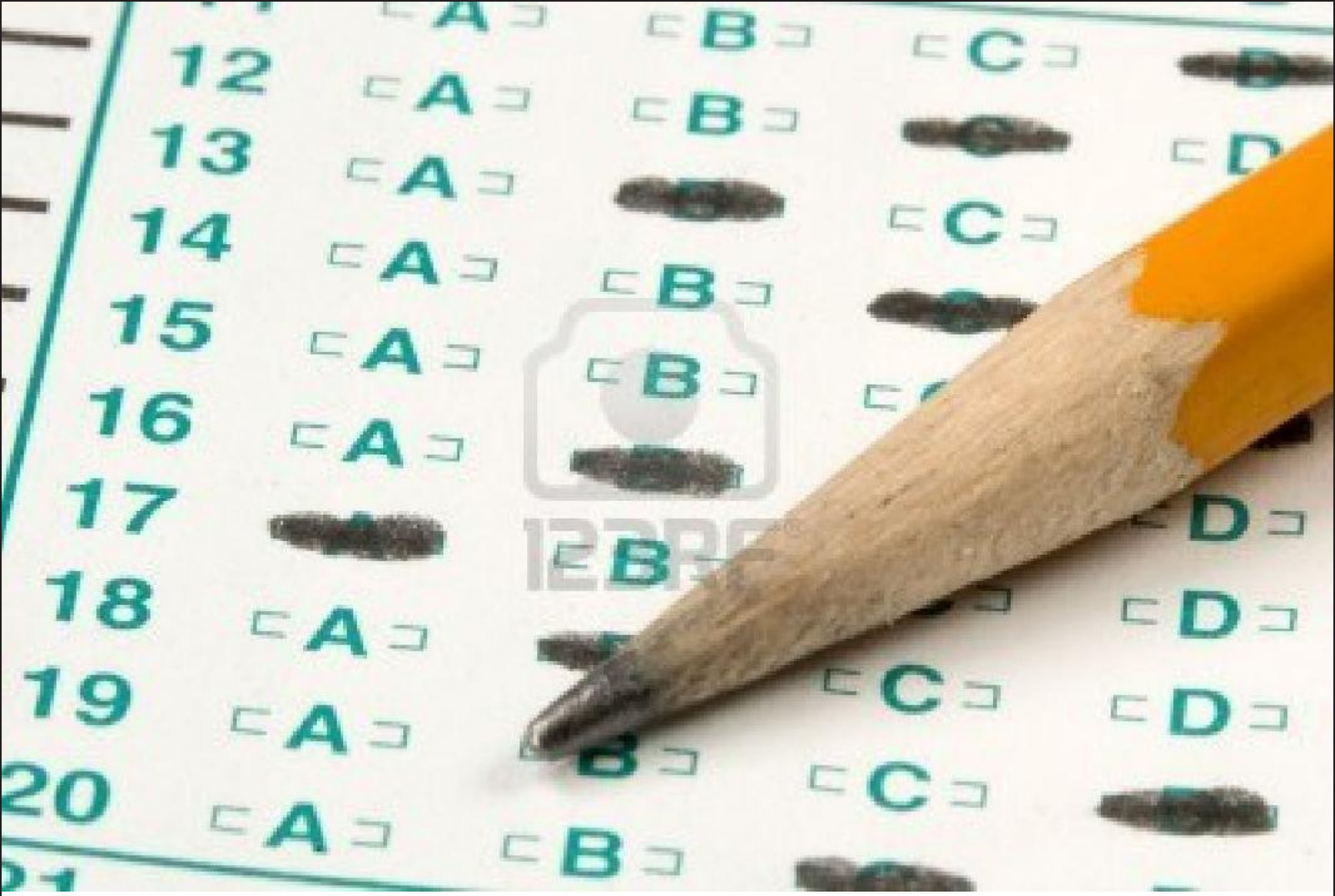


1 purposes



1 purposes

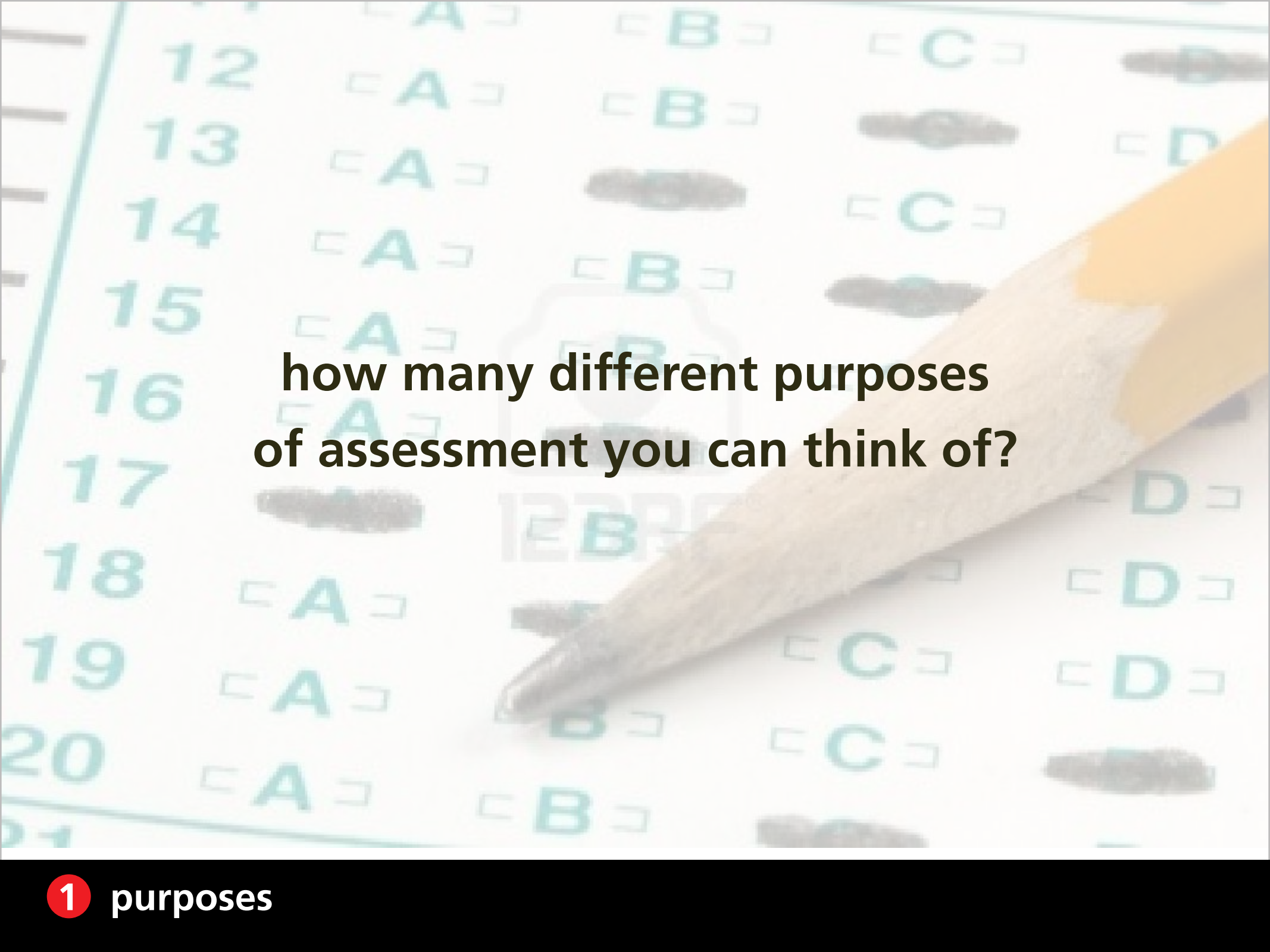
2 problems



1 purposes

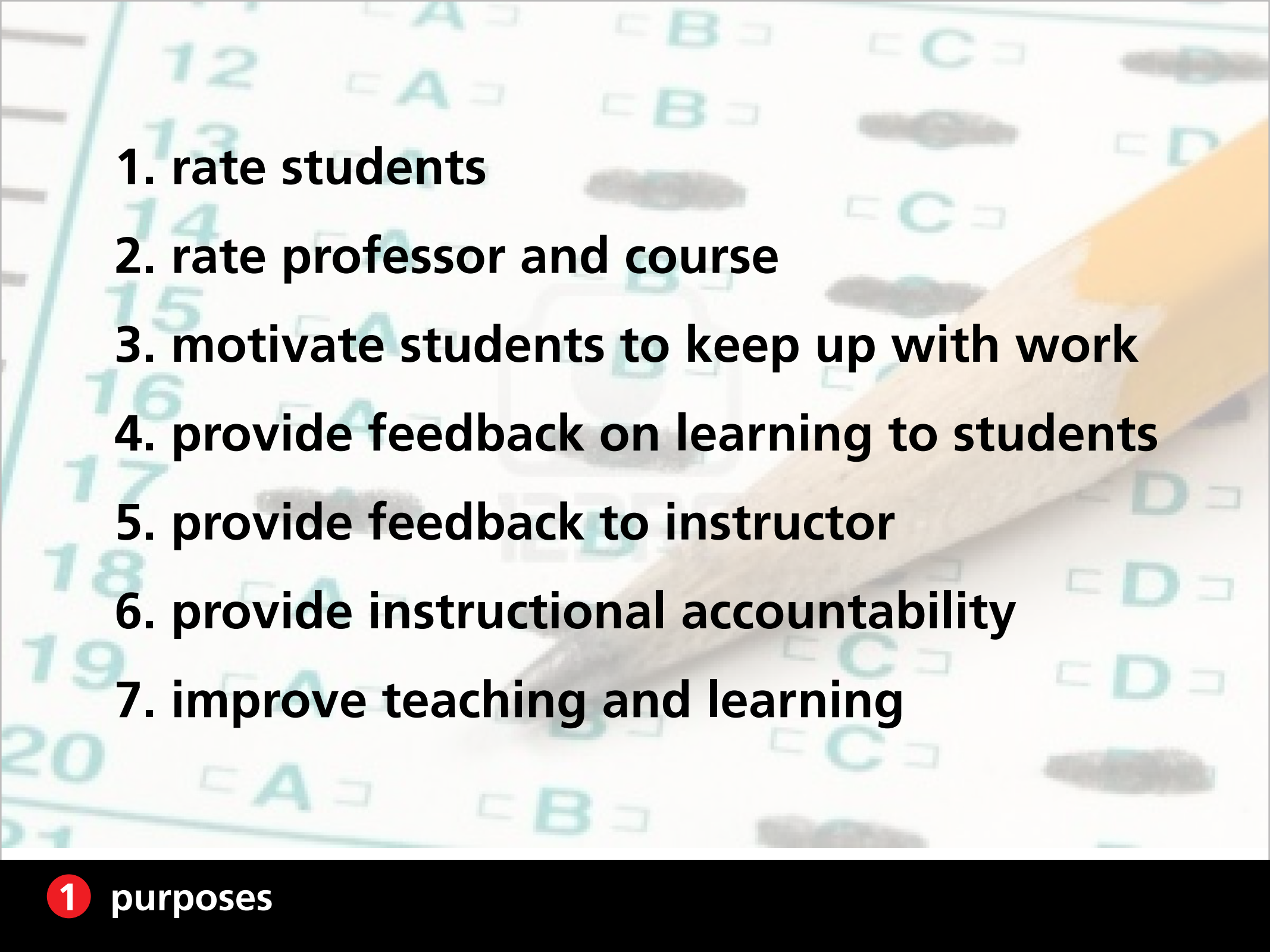
2 problems

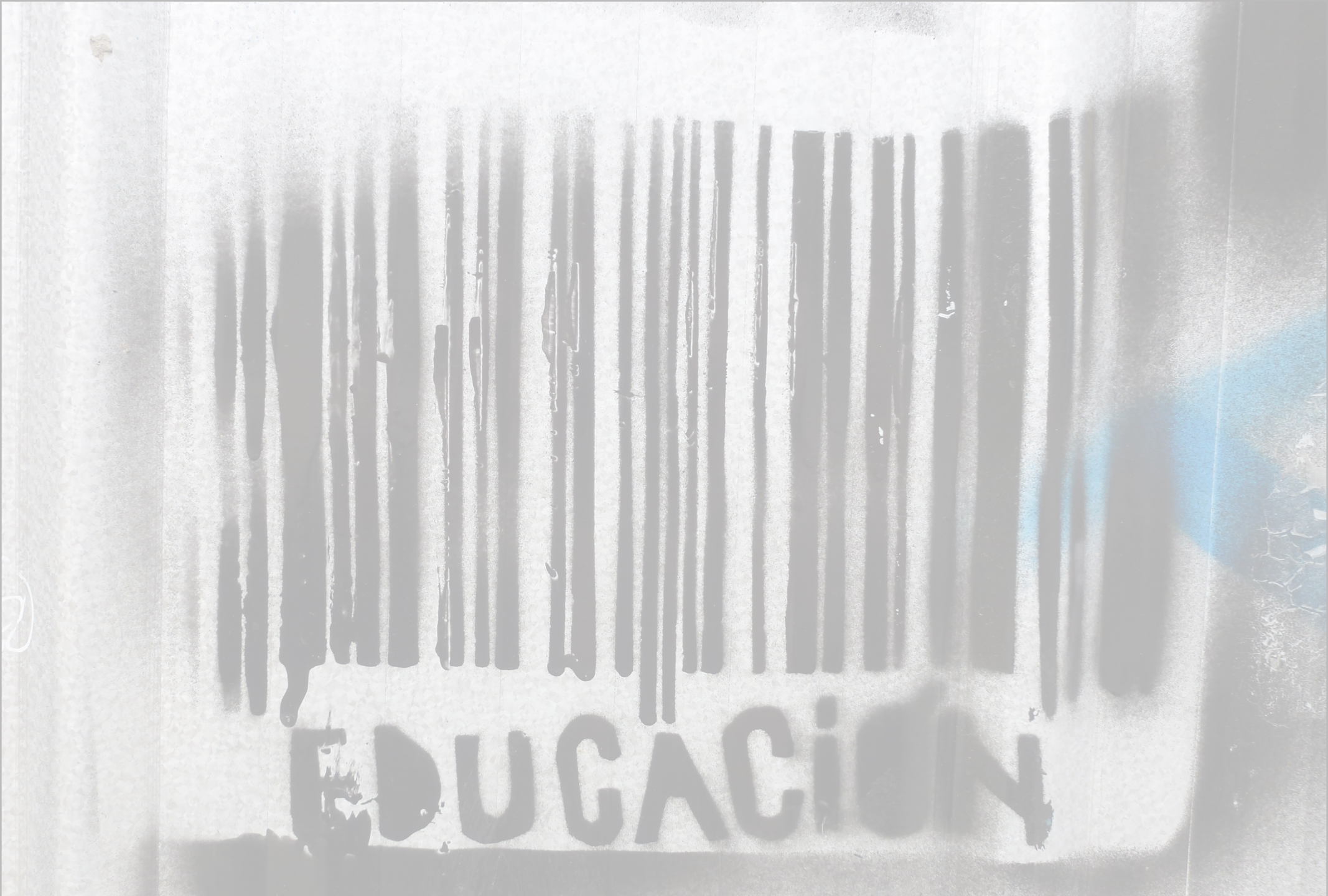
3 improvements

A close-up photograph of a wooden pencil with a yellow eraser, pointing towards the bottom left of the frame. The pencil is resting on a white multiple-choice test paper. The paper has a grid of questions numbered 12 through 20. Each question has four options labeled A, B, C, and D, each enclosed in a square box. The text 'how many different purposes of assessment you can think of?' is overlaid in the center of the image in a bold, black, sans-serif font. The background is slightly blurred, focusing attention on the pencil and the text.

**how many different purposes
of assessment you can think of?**

1 purposes

- 
- The background features a light-colored grid with faint letters (A, B, C, D) and numbers (12, 13, 14, 15, 16, 17, 18, 19, 20) scattered across it. A yellow pencil is positioned diagonally from the top right towards the bottom left, partially overlapping the grid.
- 1. rate students**
 - 2. rate professor and course**
 - 3. motivate students to keep up with work**
 - 4. provide feedback on learning to students**
 - 5. provide feedback to instructor**
 - 6. provide instructional accountability**
 - 7. improve teaching and learning**



1 purposes

2 problems

inauthentic tests

EDUCACION

1 purposes

2 problems

what is the meaning/definition of...?

EDUCACION

1 purposes

2 problems

inauthentic problem solving

EDUCACION

1 purposes

2 problems

problem

EDUCACION

1 purposes

2 problems

problem

outcome

EDUCACION

1 purposes

2 problems

problem

outcome

KNOWN

EDUCACION

1 purposes

2 problems

problem



outcome

KNOWN

EDUCACION

1 purposes

2 problems

problem

solution

outcome

UNKNOWN

KNOWN

EDUCACION

1 purposes

2 problems

problem

solution

outcome

UNKNOWN KNOWN

problem

1 purposes

2 problems

problem

solution

outcome

UNKNOWN

KNOWN

problem

procedure

KNOWN

1 purposes

2 problems

problem

solution

outcome

UNKNOWN

KNOWN

problem

procedure

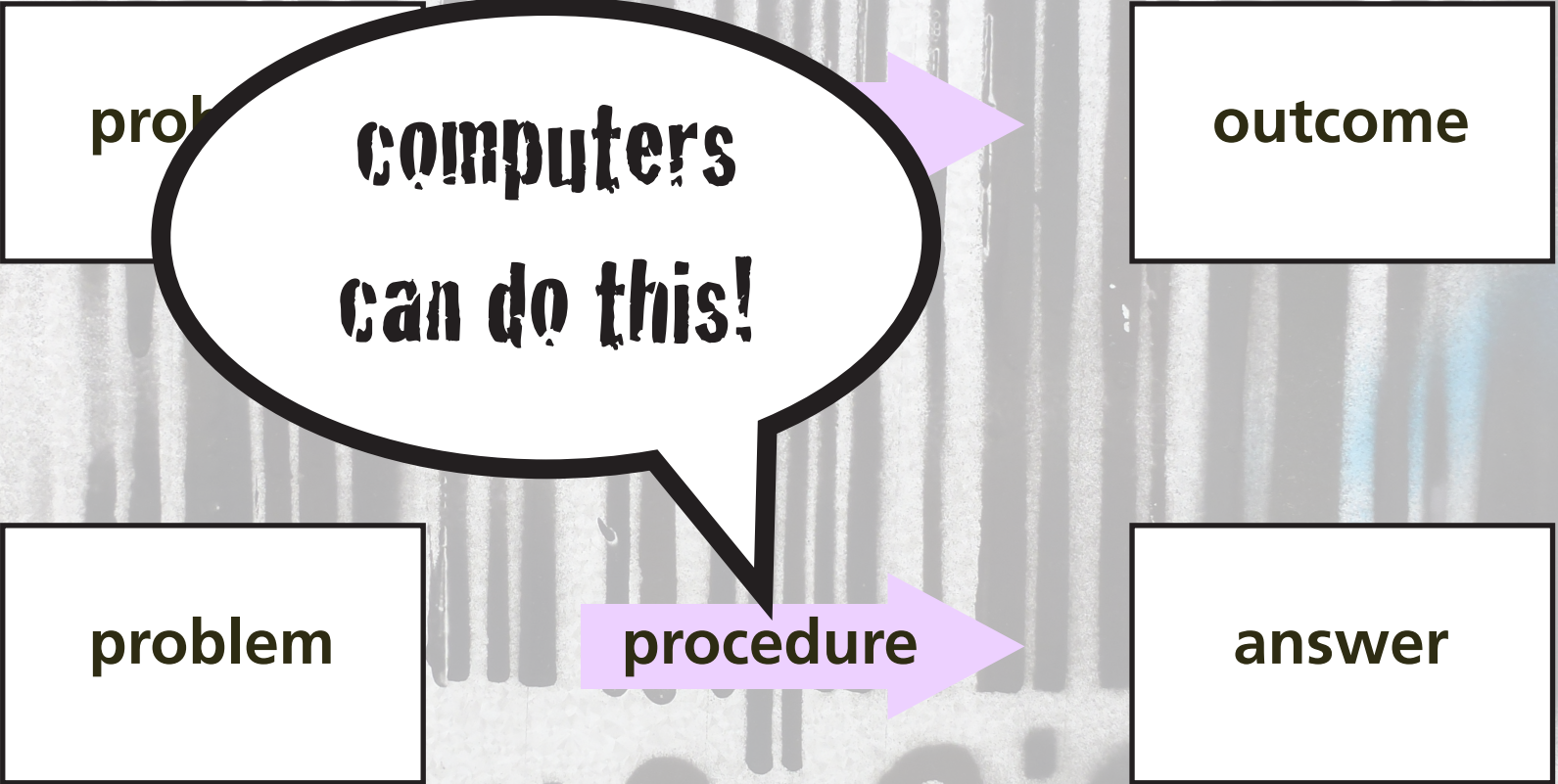
answer

KNOWN

UNKNOWN

1 purposes

2 problems



1 purposes

2 problems



1 purposes

2 problems



1 purposes

2 problems

problem

solution

outcome

problem

pre... ver

REAL
problem solving

1 purposes

2 problems

problem

approach 1

approach 3

approach 2

outcome

EDUCACION

1 purposes

2 problems

problem

approach 1

approach 3

approach 2

outcome

grading incompatible with real problem solving

1 purposes

2 problems



1 purposes

2 problems



isolation

1 purposes

2 problems

④ We will use spherical coordinates:

$0 \leq \rho \leq 4$, $0 \leq \theta \leq 2\pi$, $0 \leq \varphi \leq \pi$. The integral is thus:

$$\int_{\rho=0}^4 \int_{\theta=0}^{2\pi} \int_{\varphi=0}^{\pi} (\rho \cos \varphi) (\rho \sin \varphi) \rho \, d\varphi \, d\theta \, d\rho$$

$$= \left\{ \int_{\rho=0}^4 \int_{\theta=0}^{2\pi} \left(\int_{\varphi=0}^{\pi} \sin(2\varphi) \, d\varphi \right) \rho^3 \, d\theta \, d\rho \right\} = \boxed{0}$$

Since the third integral equals 0.

⑤ Direction vectors for the plane are

$$\begin{pmatrix} 1 \\ 1 \\ 0 \end{pmatrix}, \begin{pmatrix} 1 \\ 1 \\ 0 \end{pmatrix}, \begin{pmatrix} 0 \\ 1 \\ -1 \end{pmatrix}, \begin{pmatrix} 0 \\ 1 \\ -1 \end{pmatrix}, \begin{pmatrix} 1 \\ 1 \\ 0 \end{pmatrix}, \begin{pmatrix} 1 \\ 1 \\ 0 \end{pmatrix}, \begin{pmatrix} 0 \\ 1 \\ -1 \end{pmatrix}, \begin{pmatrix} 0 \\ 1 \\ -1 \end{pmatrix}$$

high-stakes examinations promote cramming



1 purposes

2 problems

A person is sitting at a desk, writing in a notebook. A white mug is on the desk to the left. A clock is visible in the bottom left corner. The text "information stored in short-term memory" is overlaid in the center.

information stored in short-term memory

1 purposes

2 problems



no retention

information stored in short-term memory

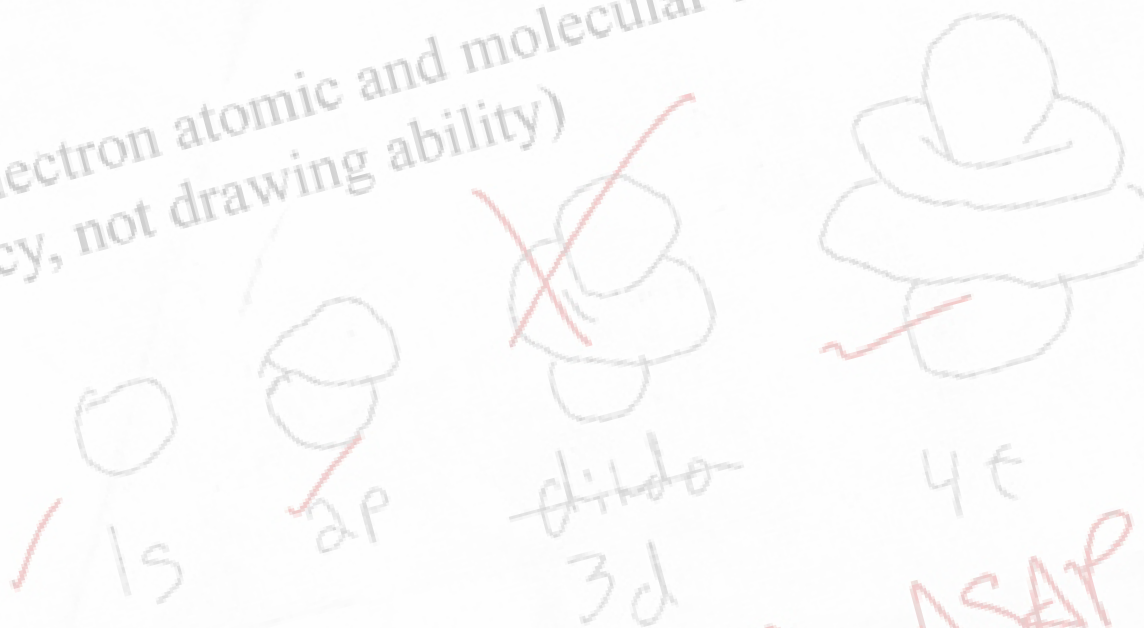
no transfer



1 purposes

2 problems

grades: measure of standing relative to others



1 purposes

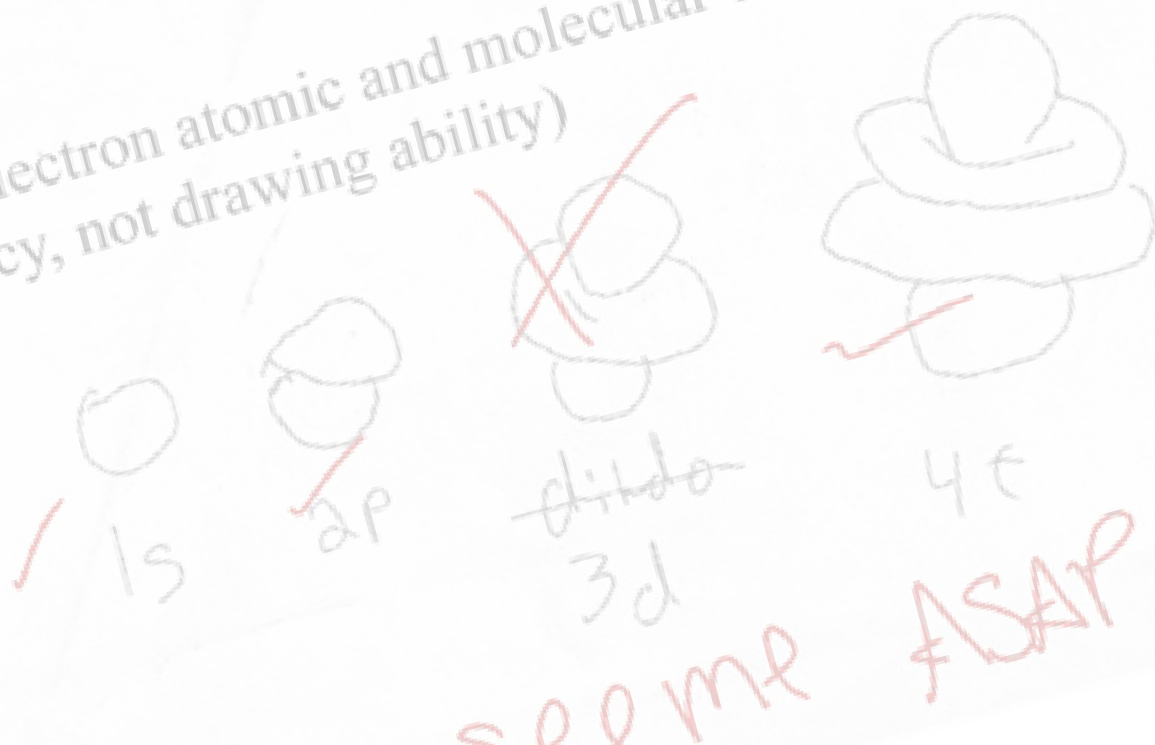
2 problems

grades: measure of standing relative to others

feedback: reflection on what has been learnt



assessment produces a conflict

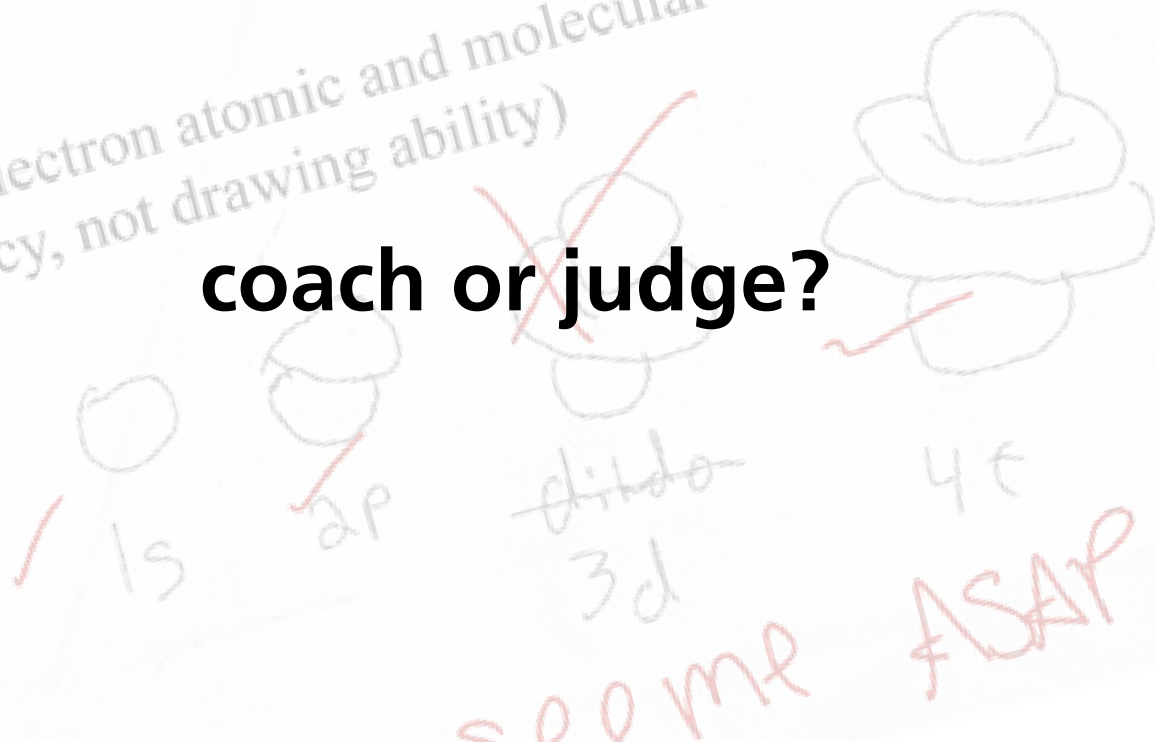


1 purposes

2 problems

assessment produces a conflict

coach or judge?

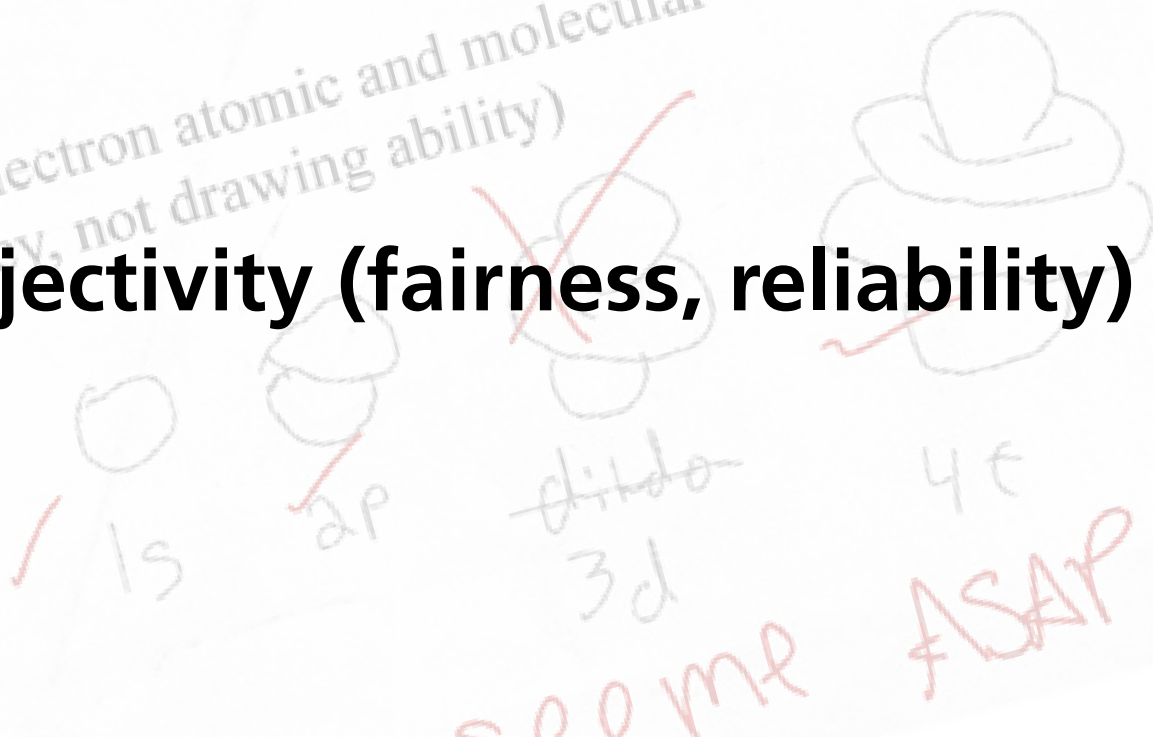


1 purposes

2 problems

conflict resolved by:

objectivity (fairness, reliability)



1 purposes

2 problems

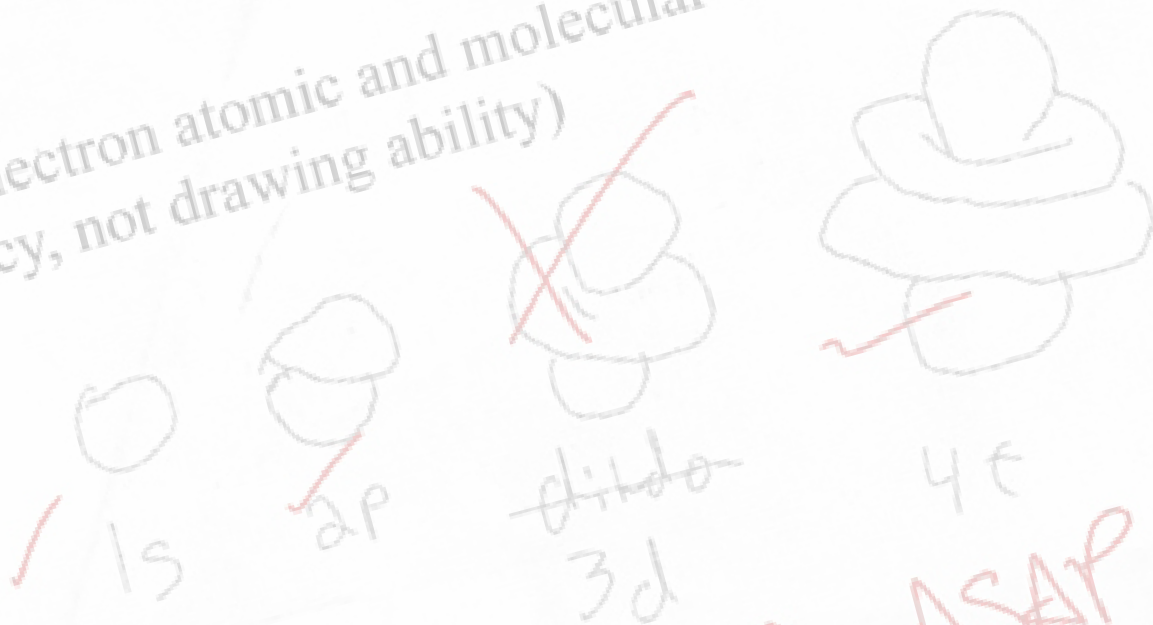
chemical (DMF)
proportion of PLM
related, I saw my T.A., Jimmy, kissing
chemical reaction does one of two things to involved substance

MICK IN FRONT OF
WEARING A WHITE
VICTORIAN SECRET
LA CREDIT
inappropriate thing

... but ...

INCREASES OR DECREASES THE
ENERGY OF THE SUBSTANCE
INVOLVED ... SOMETIMES THROUGH
THE FORM OF HEAT OR LIGHT

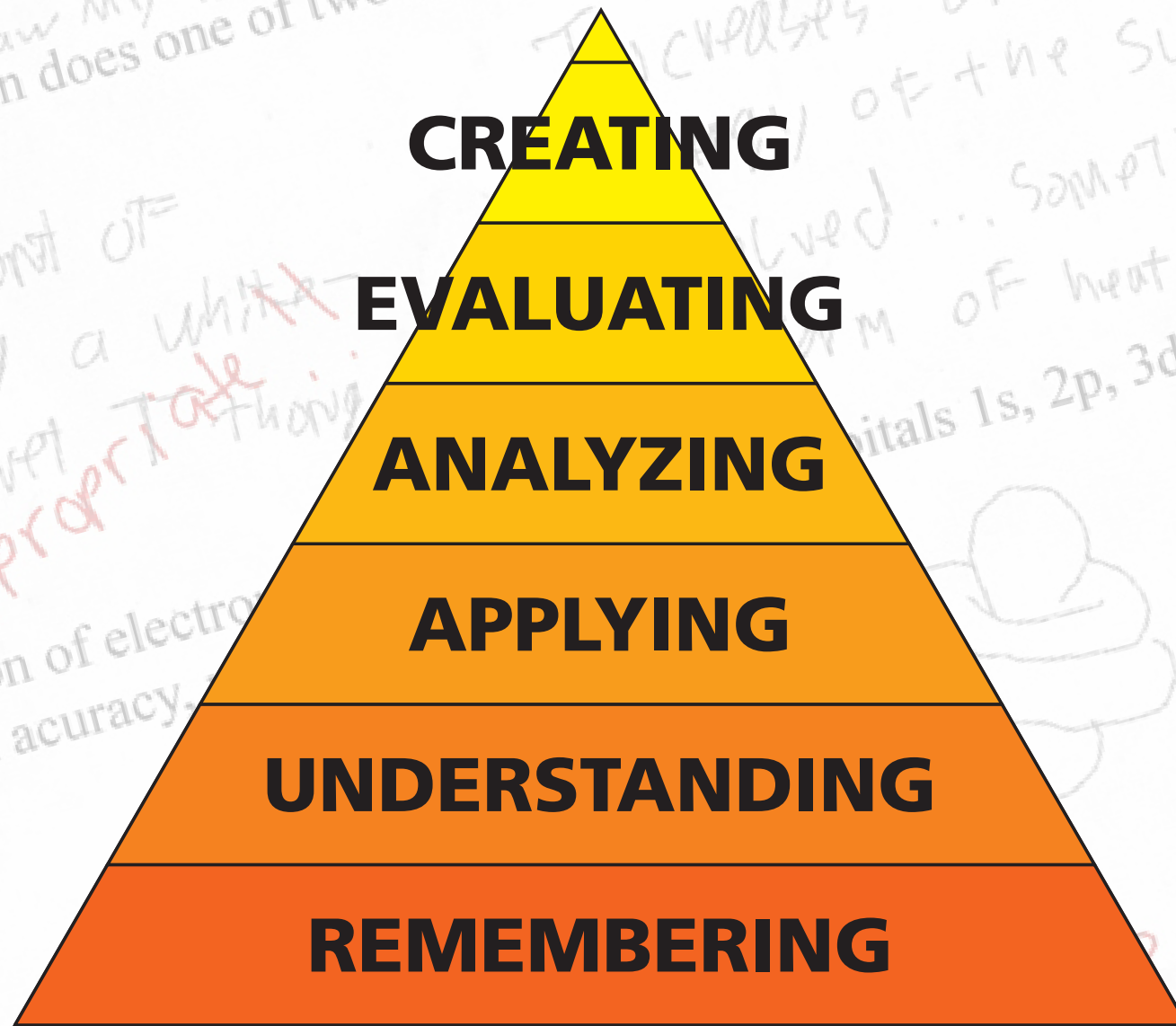
representation of electron atomic and molecular orbitals 1s, 2p, 3d and 4f.
are not based on accuracy, not drawing ability)



soo me *ASAP*

1 purposes

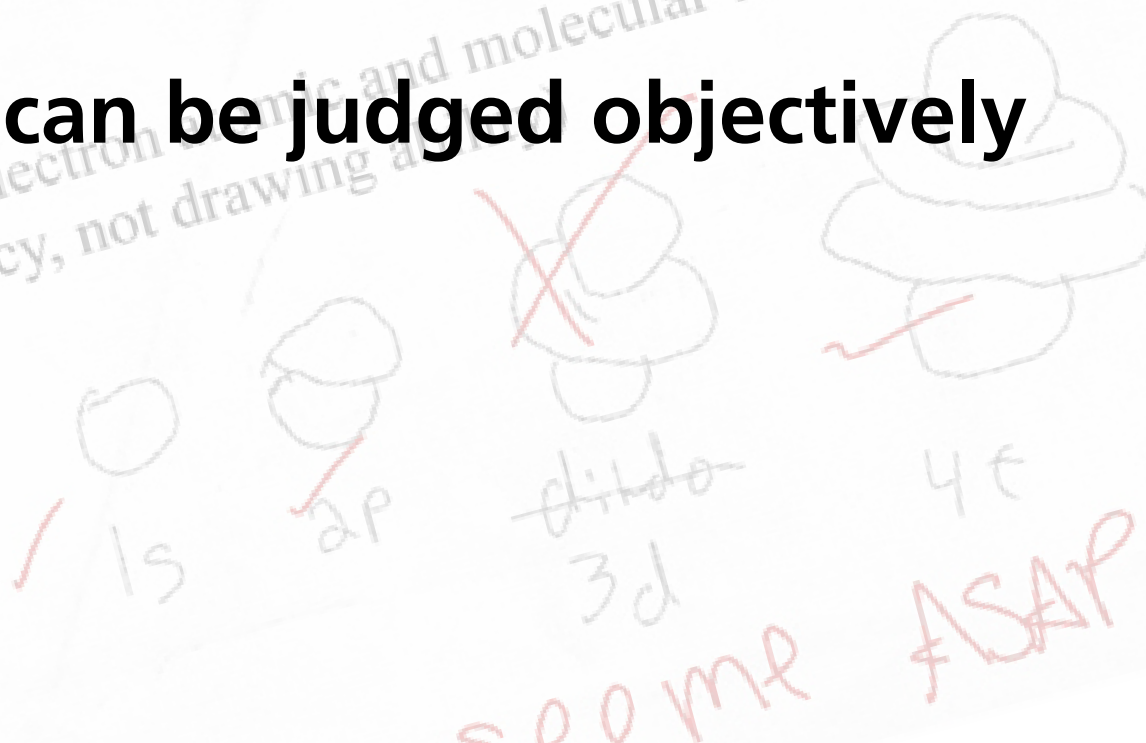
2 problems



1 purposes

2 problems

**only lowest order thinking skills
can be judged objectively**

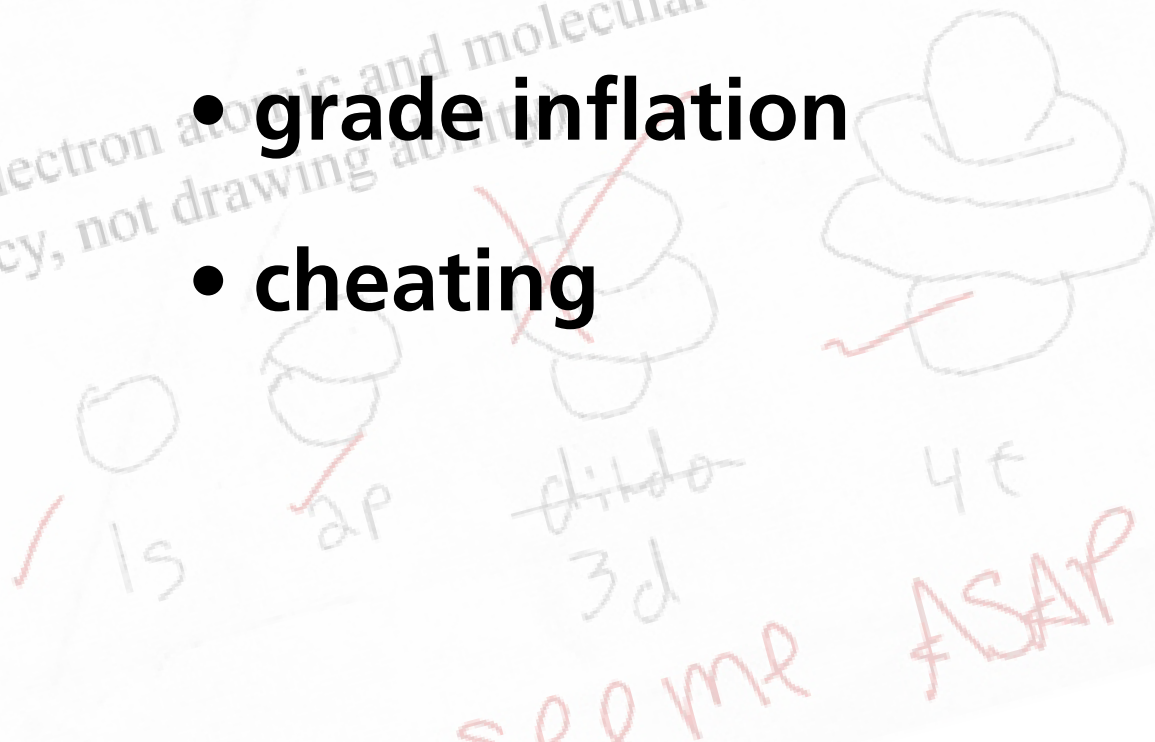


1 purposes

2 problems

and then there is...

- grade inflation
- cheating





1 purposes

2 problems

3 improvements



1

mimic real life

1 purposes

2 problems

3 improvements



open-book exam

1 purposes

2 problems

3 improvements

Google™

1 purposes

2 problems

3 improvements



1 what

2 how

IMMEDIATE FEEDBACK ASSESSMENT TECHNIQUE (IF AT)

Name Team # 3

Test # 1

Subject _____

Total 23

SCRATCH OFF COVERING TO EXPOSE ANSWER

| | A | B | C | D | Score |
|-----|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------|
| 1. | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <u>4</u> |
| 2. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <u>2</u> |
| 3. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <u>4</u> |
| 4. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <u>1</u> |
| 5. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <u>4</u> |
| 6. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <u>4</u> |
| 7. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <u>0</u> |
| 8. | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <u>4</u> |
| 9. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <u> </u> |
| 10. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <u> </u> |

① purposes

② problems

③ improvements



1 purposes

2 problems

3 improvements

session 445949

This is the team round. If you respond to a question, it will count for your entire team (you, Brent Jones, Beth Sawyer, and team should respond to each question (otherwise it will count as multiple attempts).



Jump to ▾

1

2

[+ Show my team's responses](#)

6x-6
Brian Lukoff

6x
Brent Jones

6x-6
Beth Sawyer

6x^2-6
Kip Harmon

expression question

What is the derivative of $f(x) = 3x^2 - 6x$?

Submit response

For example, enter x^2 for x^2 , $\ln(y) - \sin(x)$ for $\ln y - \sin x$, $x/(y+1)$ for $\frac{x}{y+1}$, $(1/2)x$ for $\frac{1}{2}x$, etc.

0/2 questions attempted, 0/0 possible points so far in team round [Score details](#)

Current team: Blue team [Change team](#)

[Change seat](#)

[Send a message to the instructor](#)

[Join](#)

1 purposes

2 problems

3 improvements



1 what

2 how



2

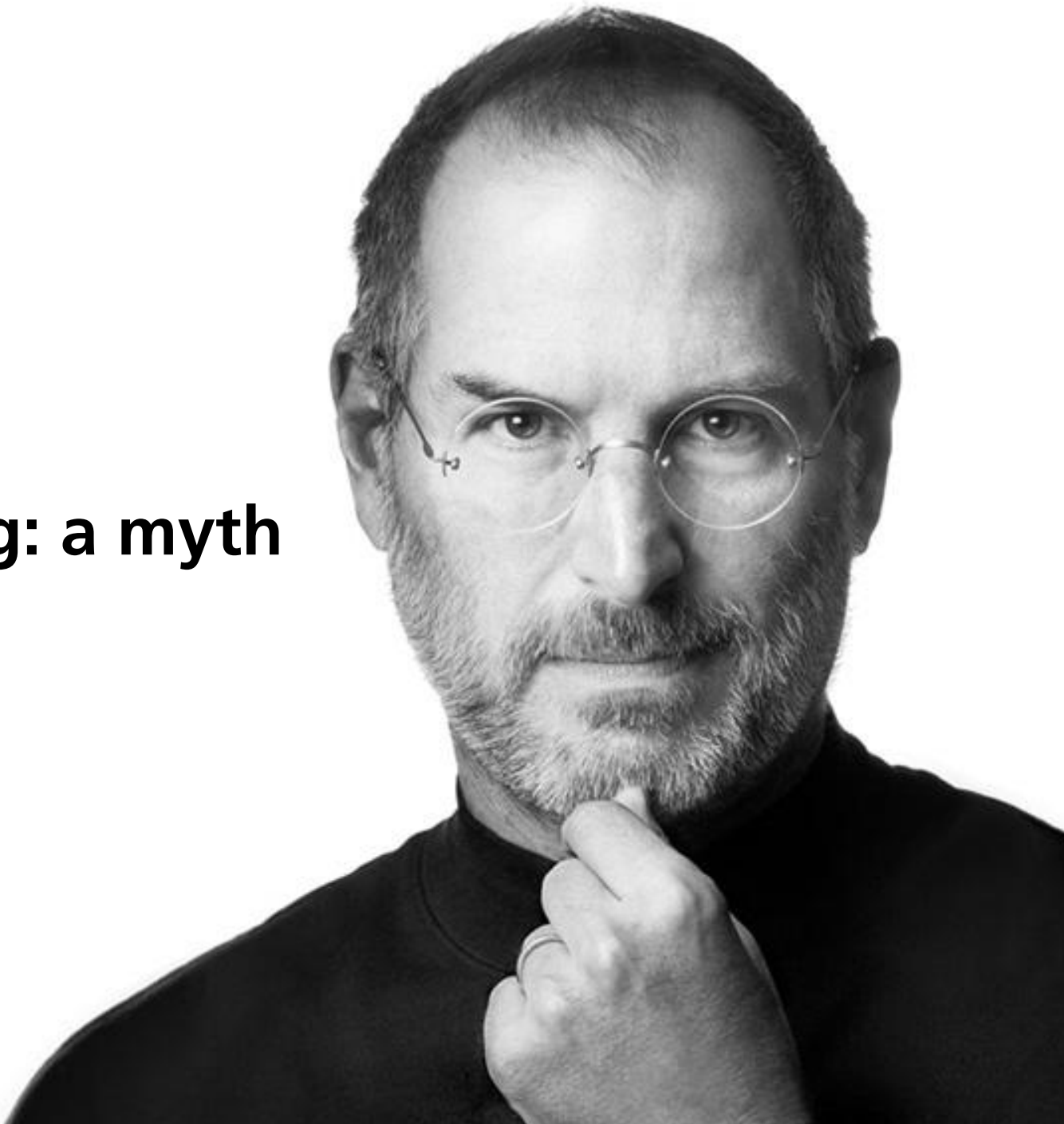
focus on feedback, not ranking

1 purposes

2 problems

3 improvements

objective ranking: a myth

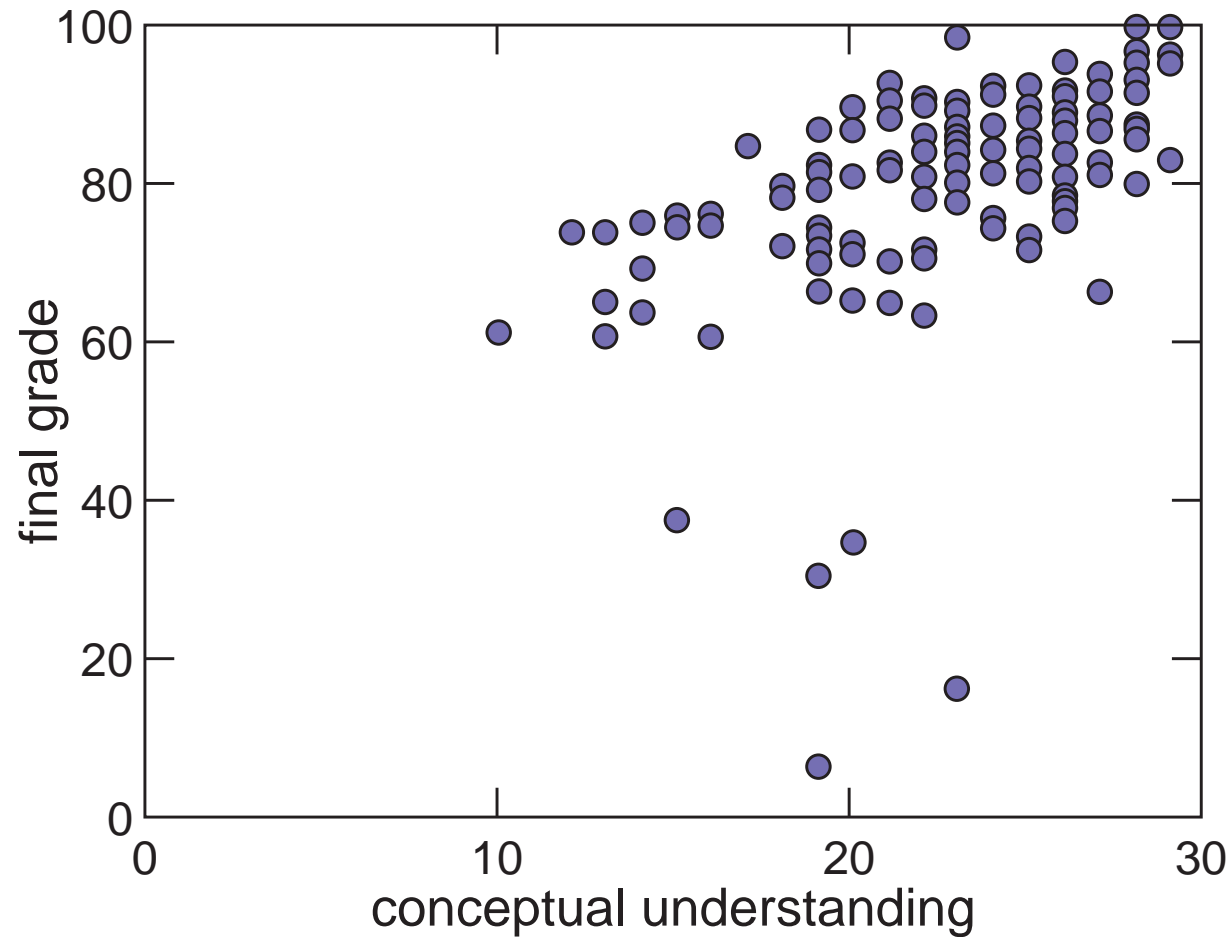


1 purposes

2 problems

3 improvements

2 metrics, 2 results

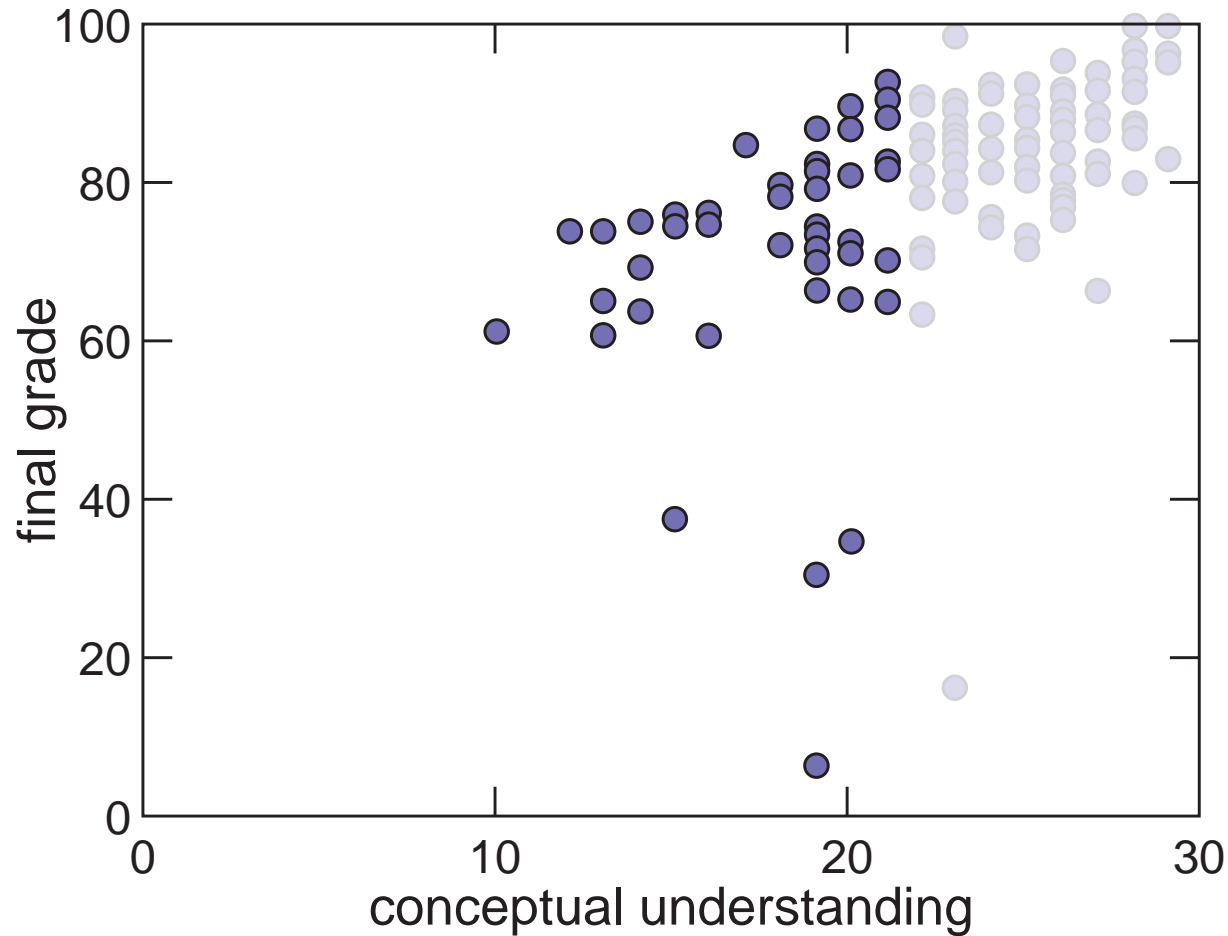


1 purposes

2 problems

3 improvements

Aristotelian thinkers

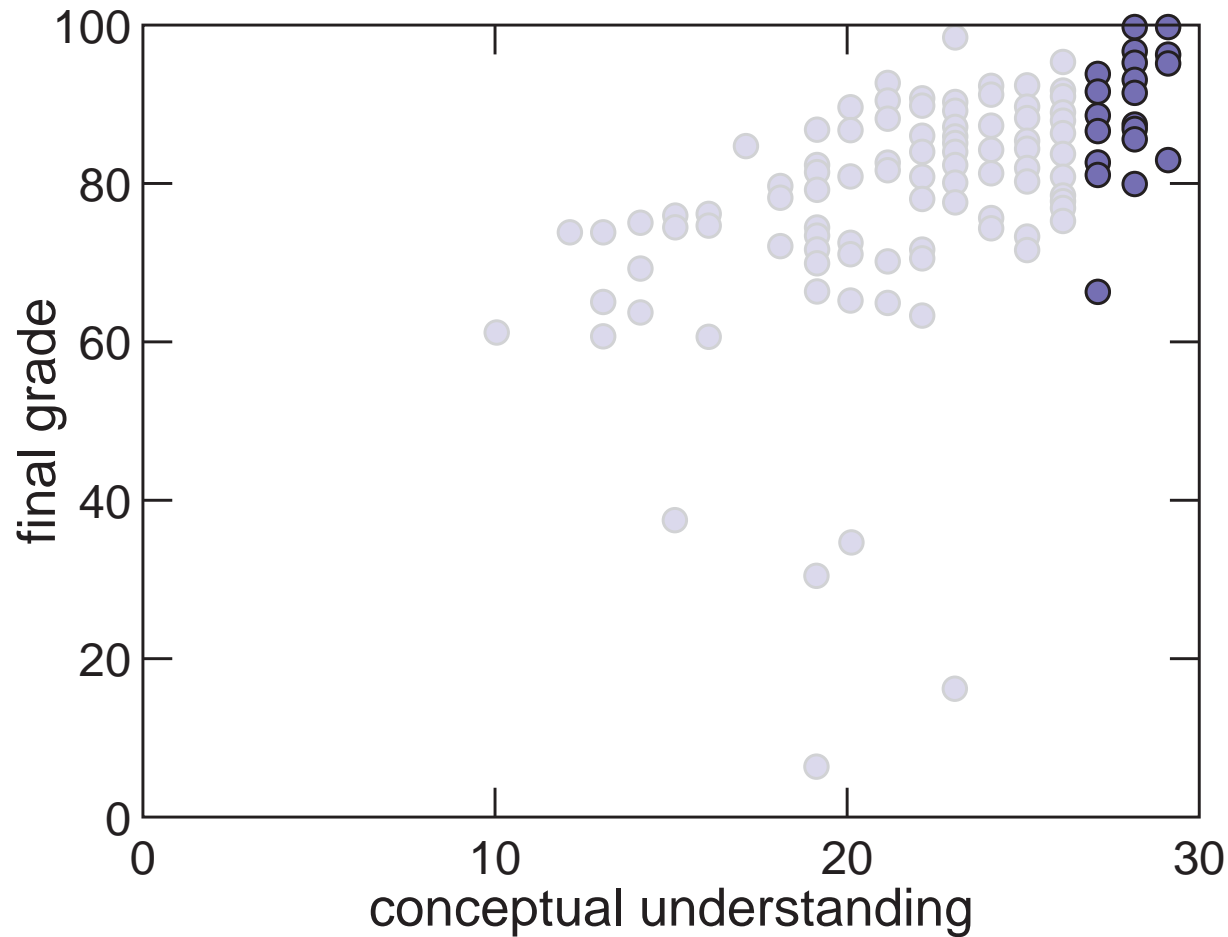


1 purposes

2 problems

3 improvements

top performers, broad grade distribution

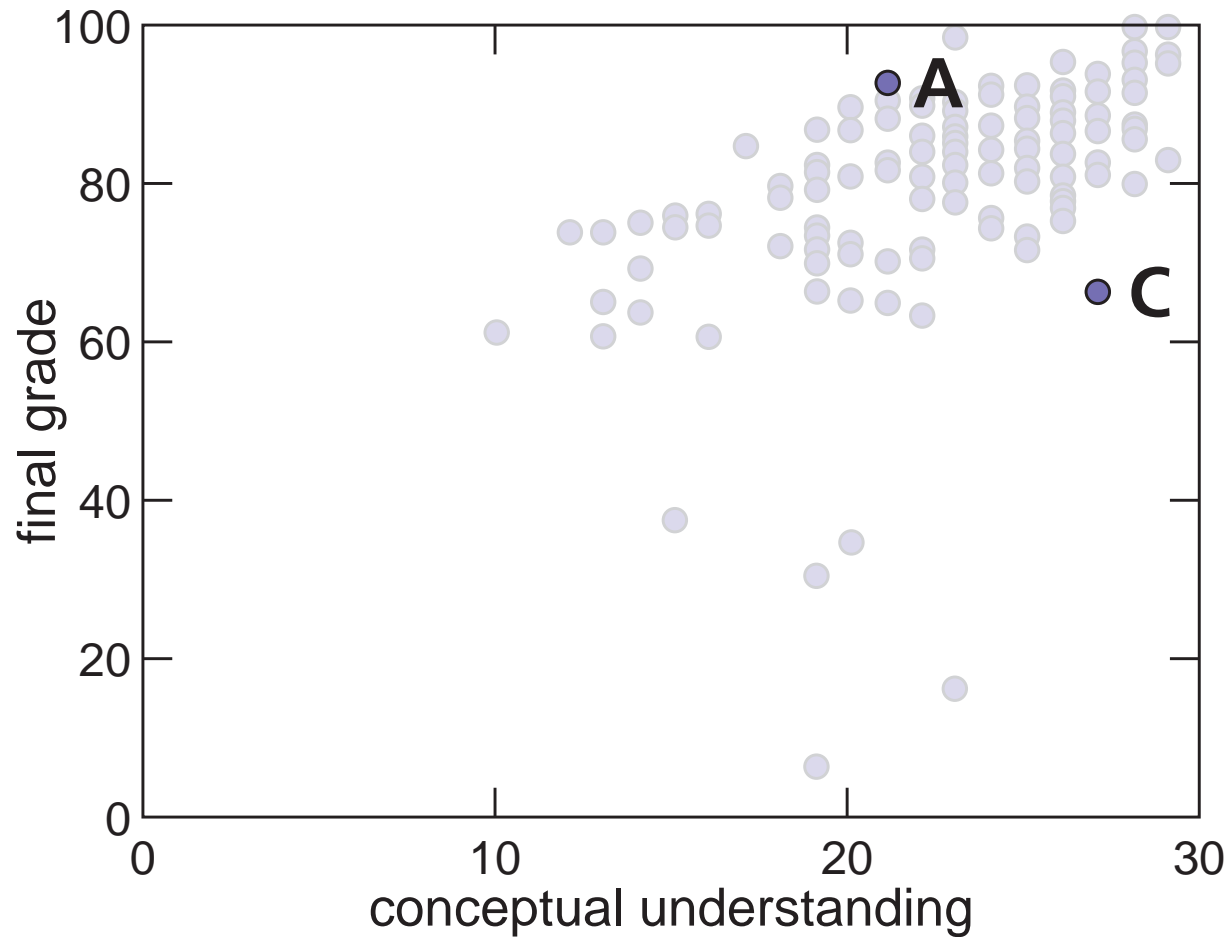


1 purposes

2 problems

3 improvements

objectivity or injustice?



1 purposes

2 problems

3 improvements



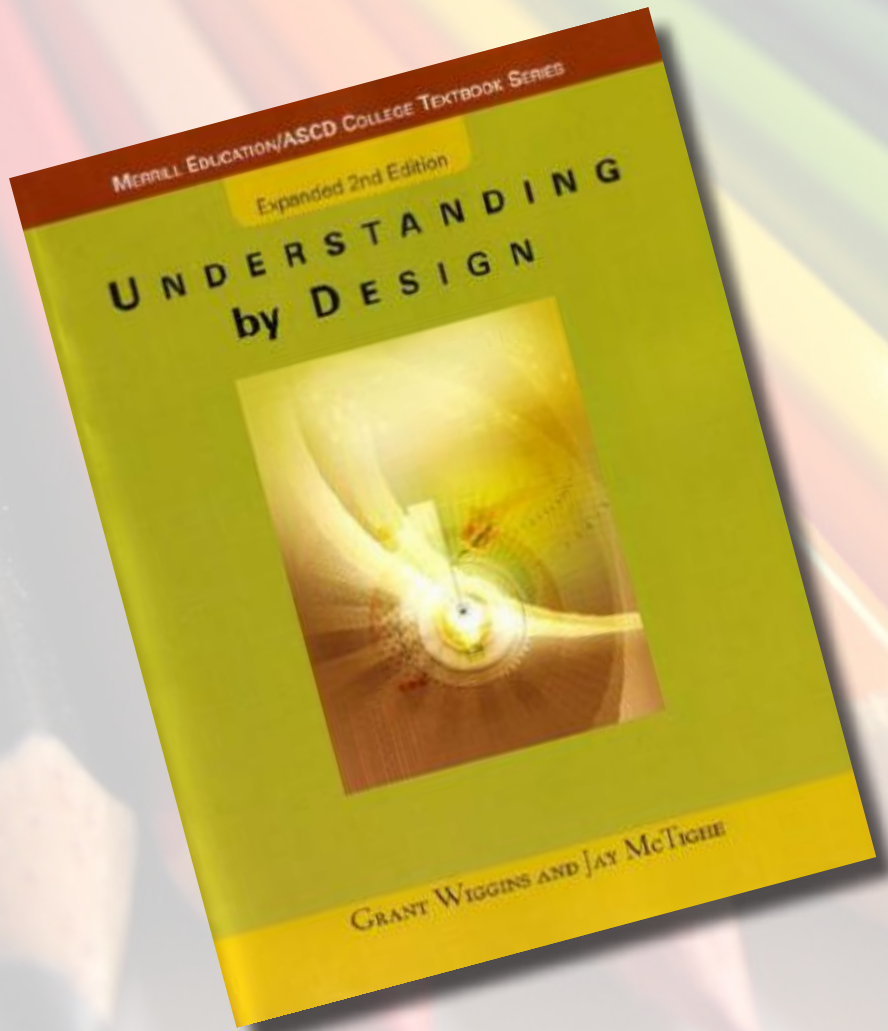
3

focus on skills, not content

1 purposes

2 problems

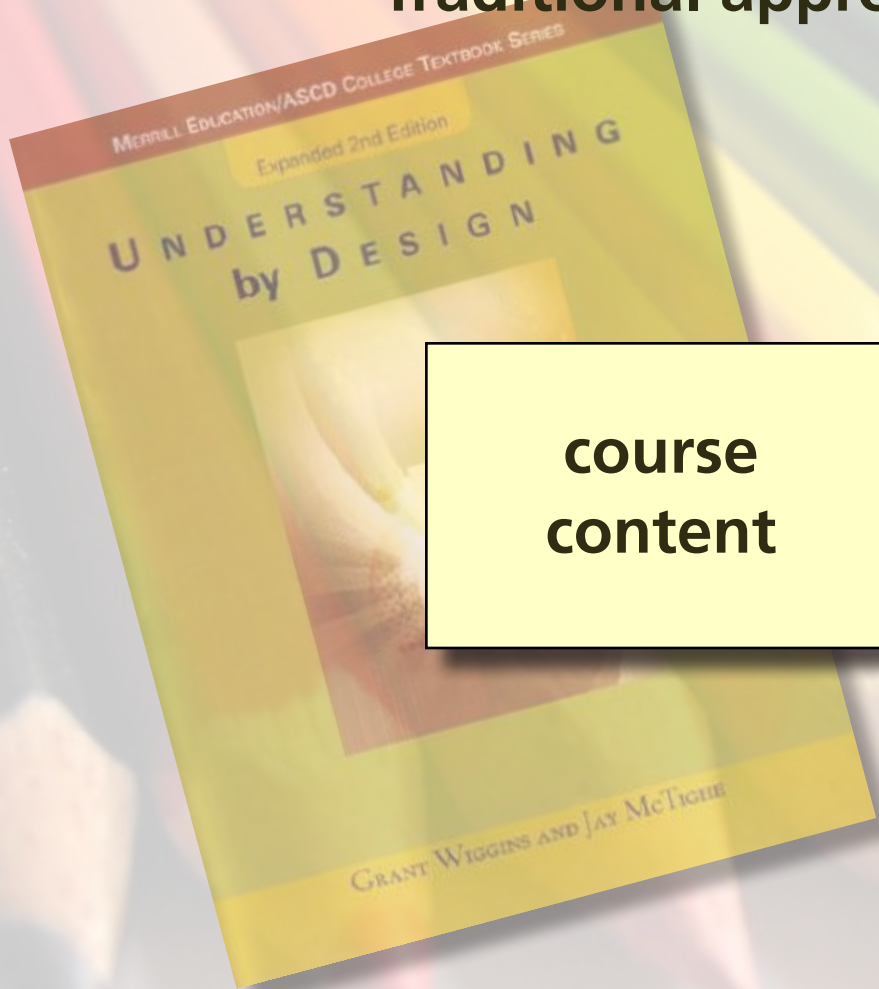
3 improvements



Grant Wiggins and Jay McTighe, *Understanding by Design* (Prentice Hall, 2001)

- 1 purposes
- 2 problems
- 3 improvements

Traditional approach to course planning



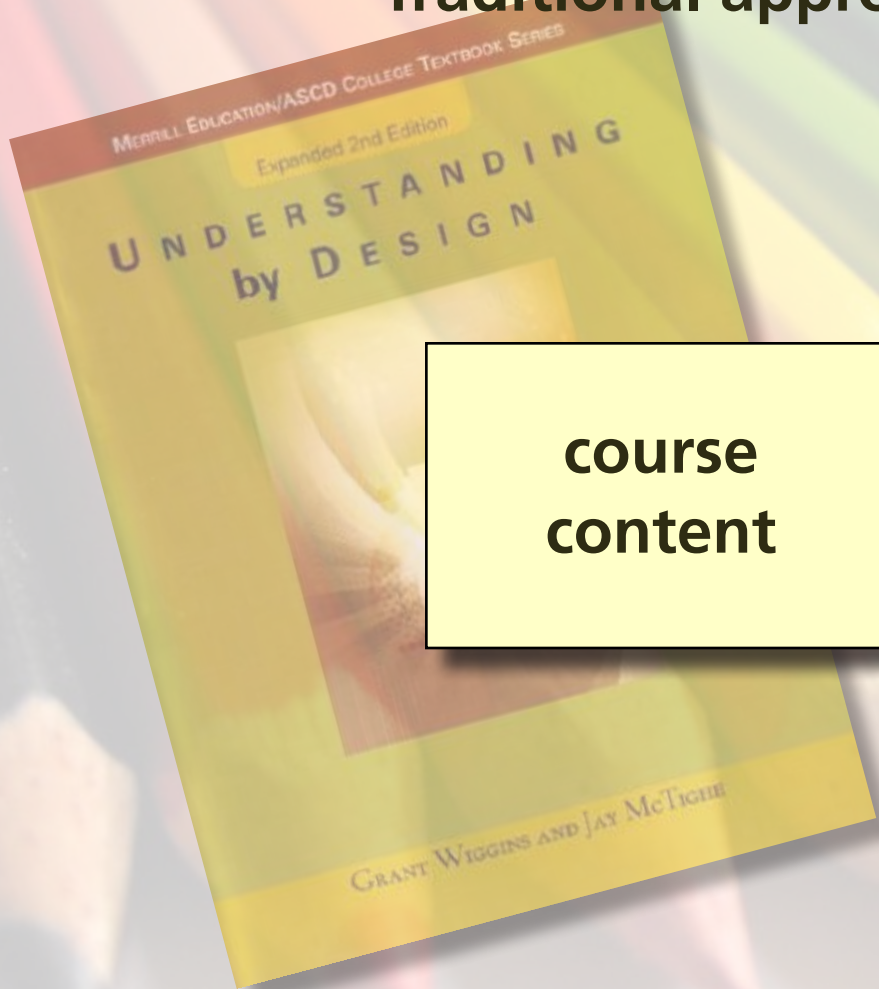
**course
content**

1 purposes

2 problems

3 improvements

Traditional approach to course planning



**course
content**



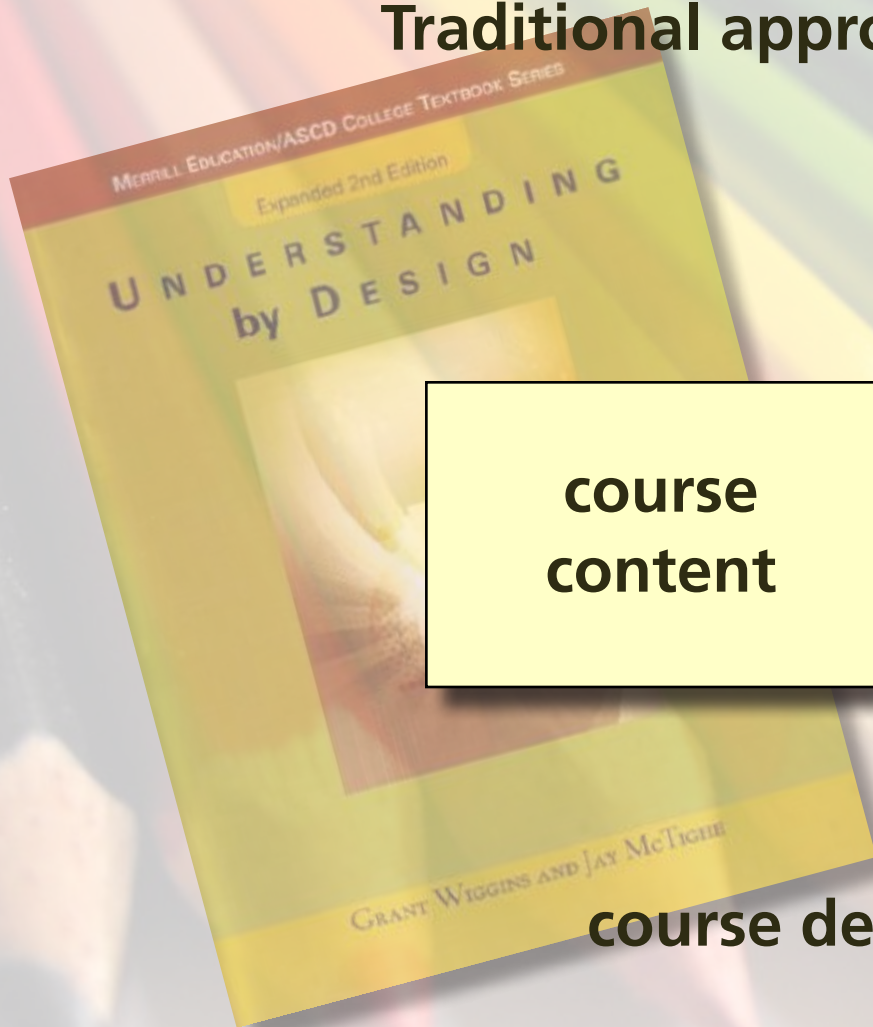
assessment

1 purposes

2 problems

3 improvements

Traditional approach to course planning



**course
content**



assessment

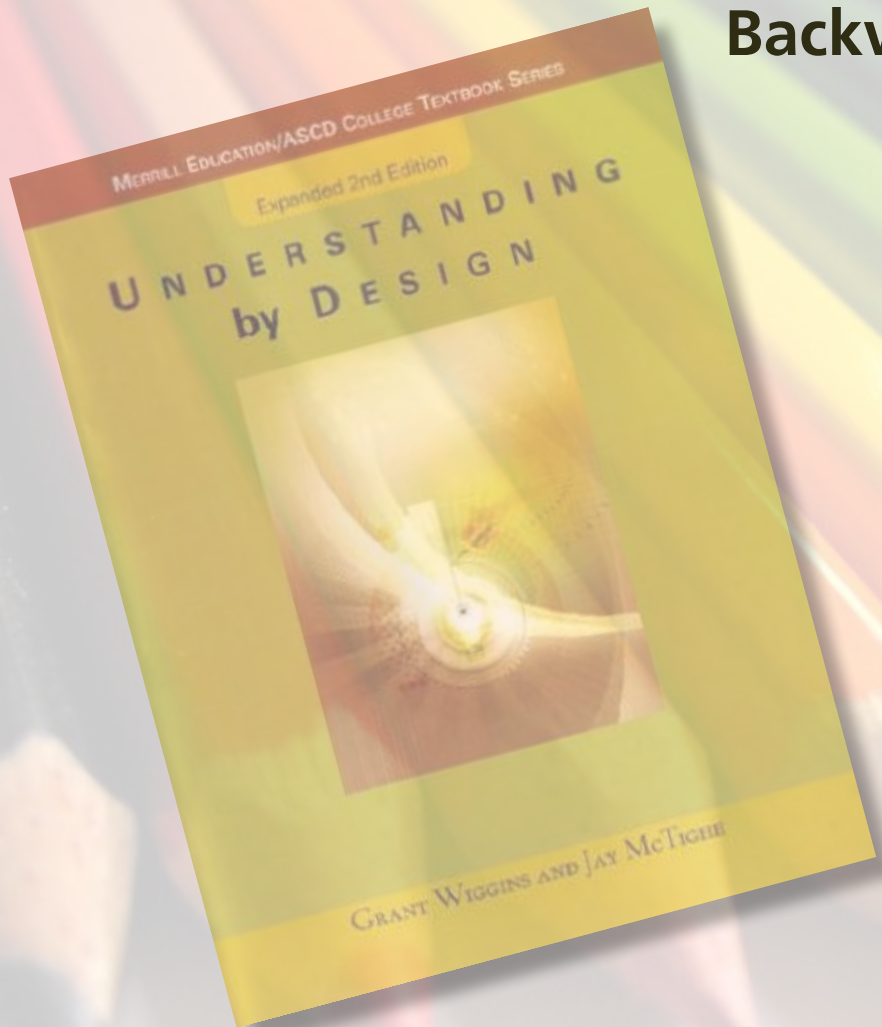
course defined by content

1 purposes

2 problems

3 improvements

Backward design



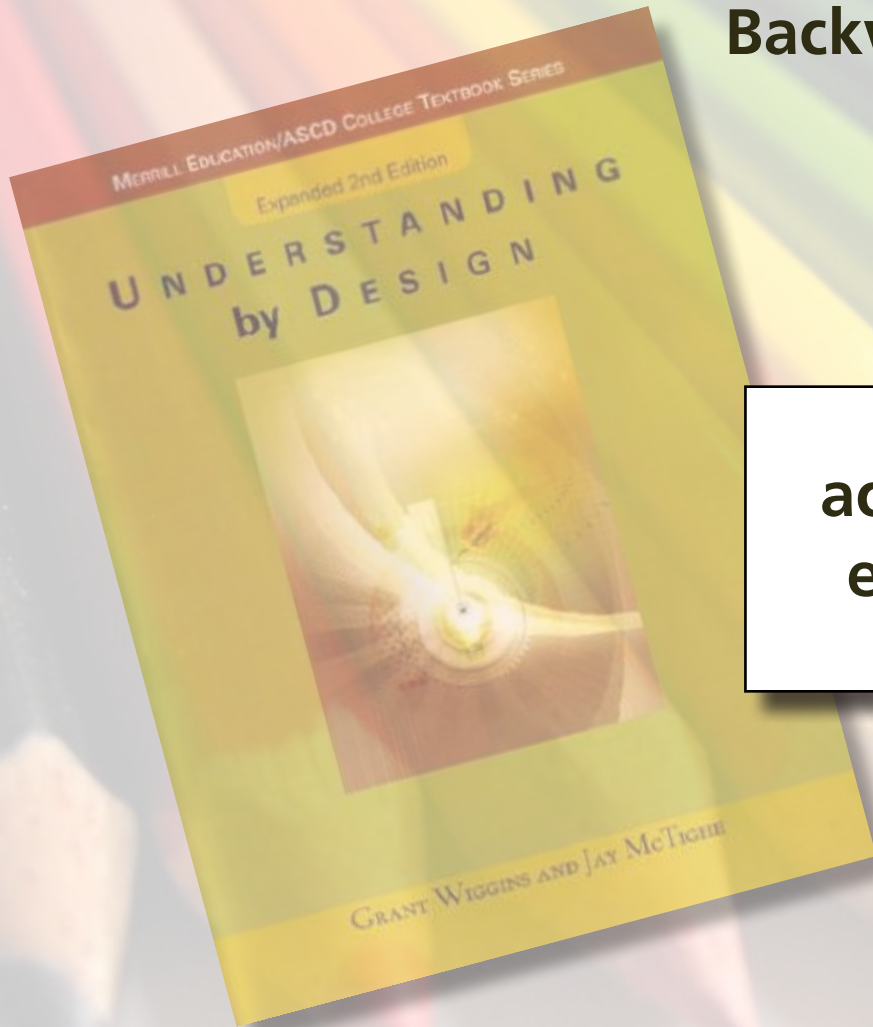
**desired
outcomes**

1 purposes

2 problems

3 improvements

Backward design



acceptable
evidence



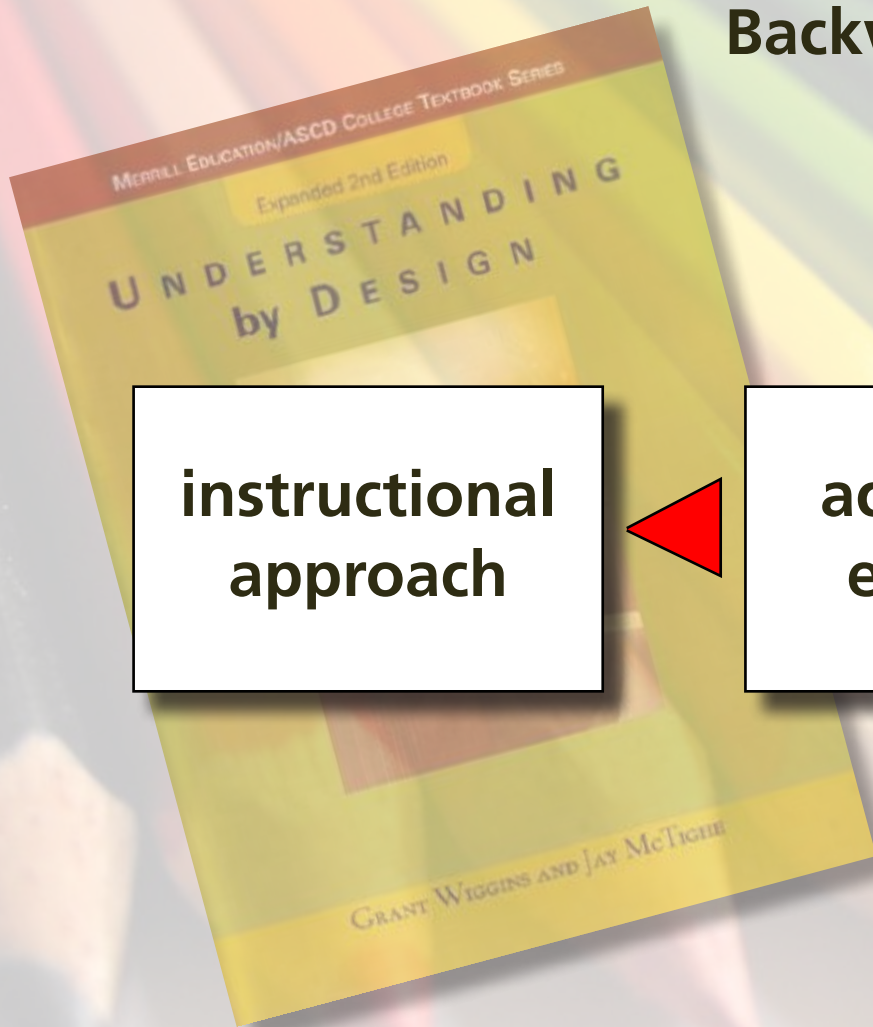
desired
outcomes

1 purposes

2 problems

3 improvements

Backward design



**instructional
approach**

**acceptable
evidence**

**desired
outcomes**

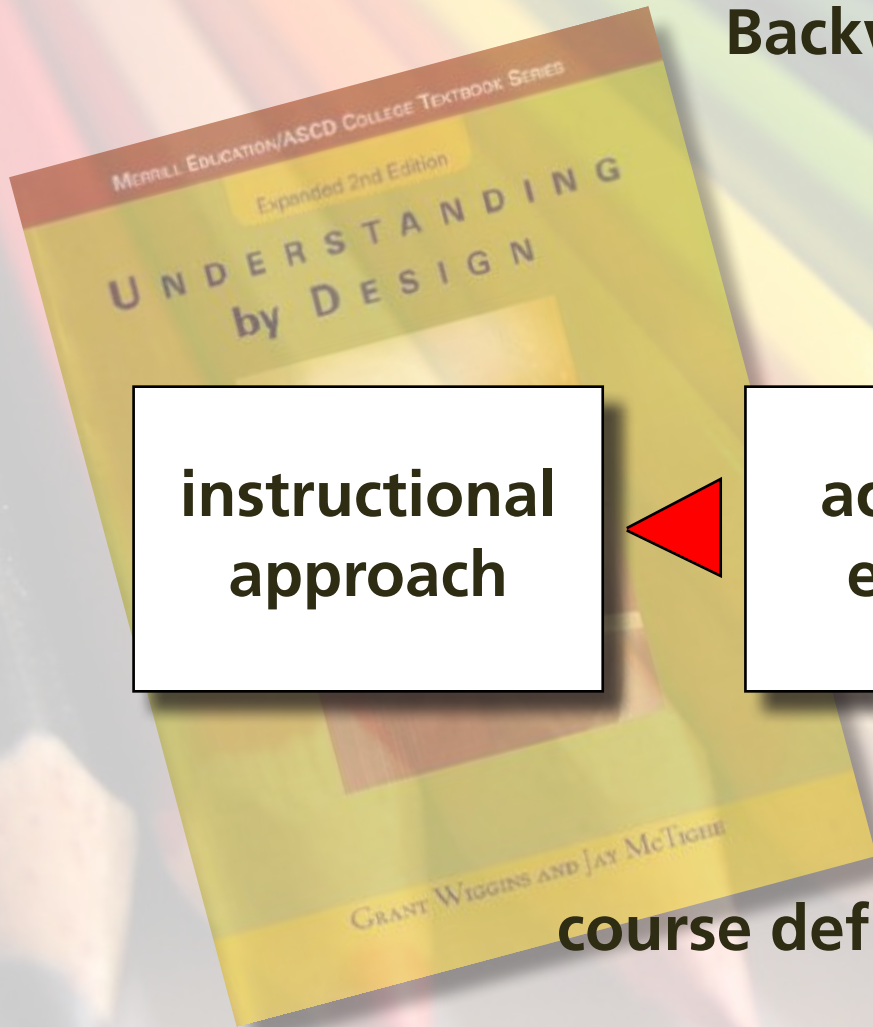


1 purposes

2 problems

3 improvements

Backward design



**instructional
approach**

**acceptable
evidence**

**desired
outcomes**

course defined by outcomes

1 purposes

2 problems

3 improvements



4

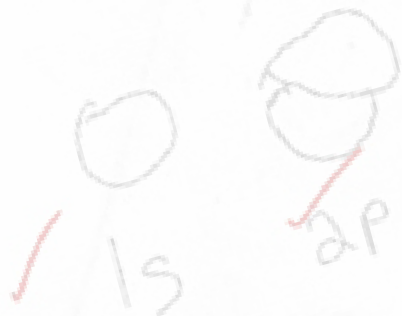
resolve coach/judge conflict

1 purposes

2 problems

3 improvements

use external evaluators



soo me

ASAP

1 purposes

2 problems

3 improvements

peer- and self-assessment



soo me

ASAP

- 1 purposes
- 2 problems
- 3 improvements

Calibrated Peer Review

cpr.molsci.ucla.edu

- 1 purposes
- 2 problems
- 3 improvements

Calibrated Peer Review

- upload work

cpr.molsci.ucla.edu

1 purposes

2 problems

3 improvements

Calibrated Peer Review

- upload work
- rubric-based scoring of 3 calibrated pieces

cpr.molsci.ucla.edu

1 purposes

2 problems

3 improvements

Calibrated Peer Review

- upload work
- rubric-based scoring of 3 calibrated pieces
- scoring of work by 3 peers

cpr.molsci.ucla.edu

1 purposes

2 problems

3 improvements

Calibrated Peer Review

- upload work
- rubric-based scoring of 3 calibrated pieces
- scoring of work by 3 peers
- scoring of own work

cpr.molsci.ucla.edu

1 purposes

2 problems

3 improvements



A large, empty classroom with rows of desks and chairs. The room has a light blue floor with yellow and red lines. The walls are light-colored wood paneling. The text "rethink assessment" is overlaid in the center in a large, bold, black font with a blue outline.

**rethink
assessment**



mazur.harvard.edu

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