

Assessment: The Silent Killer of Learning



Three College Collaboration Retreat
Babson/Olin/Wellesley
Needham, MA, 17 January 2014



Assessment: The Silent Killer of Learning



@eric_mazur

Three College Collaboration Retreat
Babson/Olin/Wellesley
Needham, MA, 17 January 2014



kosten

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

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

kannte-gekantt *irreg.*

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

07

outh

verba

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.)



**35% retained
after 1 week**

kosten

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

krank

die Krankheit, —, —en

455

pedantic

adj. ostentatious in one's learning

23 of 100

kennen

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

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





5-minute university



What are the following...
1. Personal...
2. The...
3. The...
4. The...
5. The...

...
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...
...

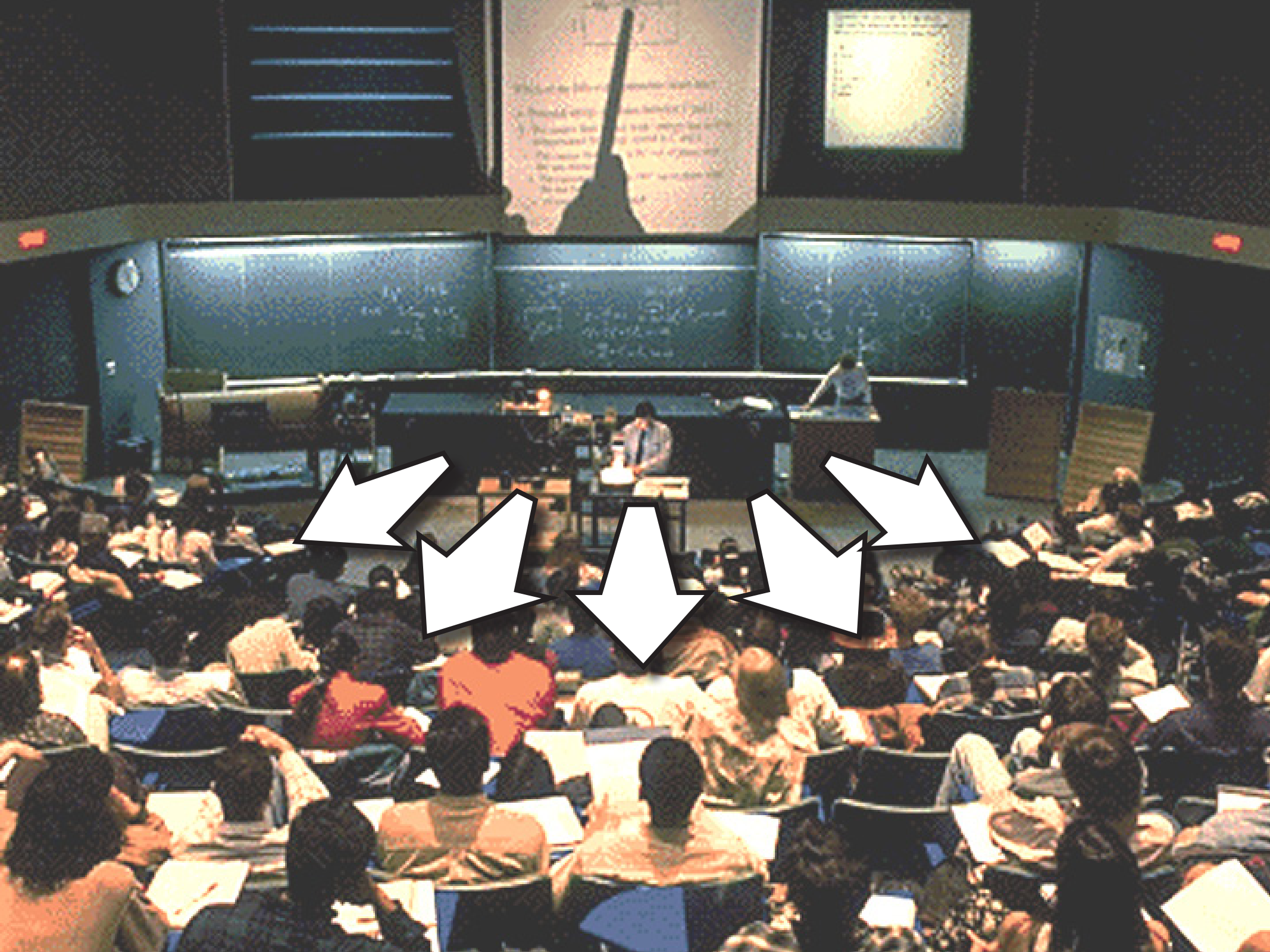
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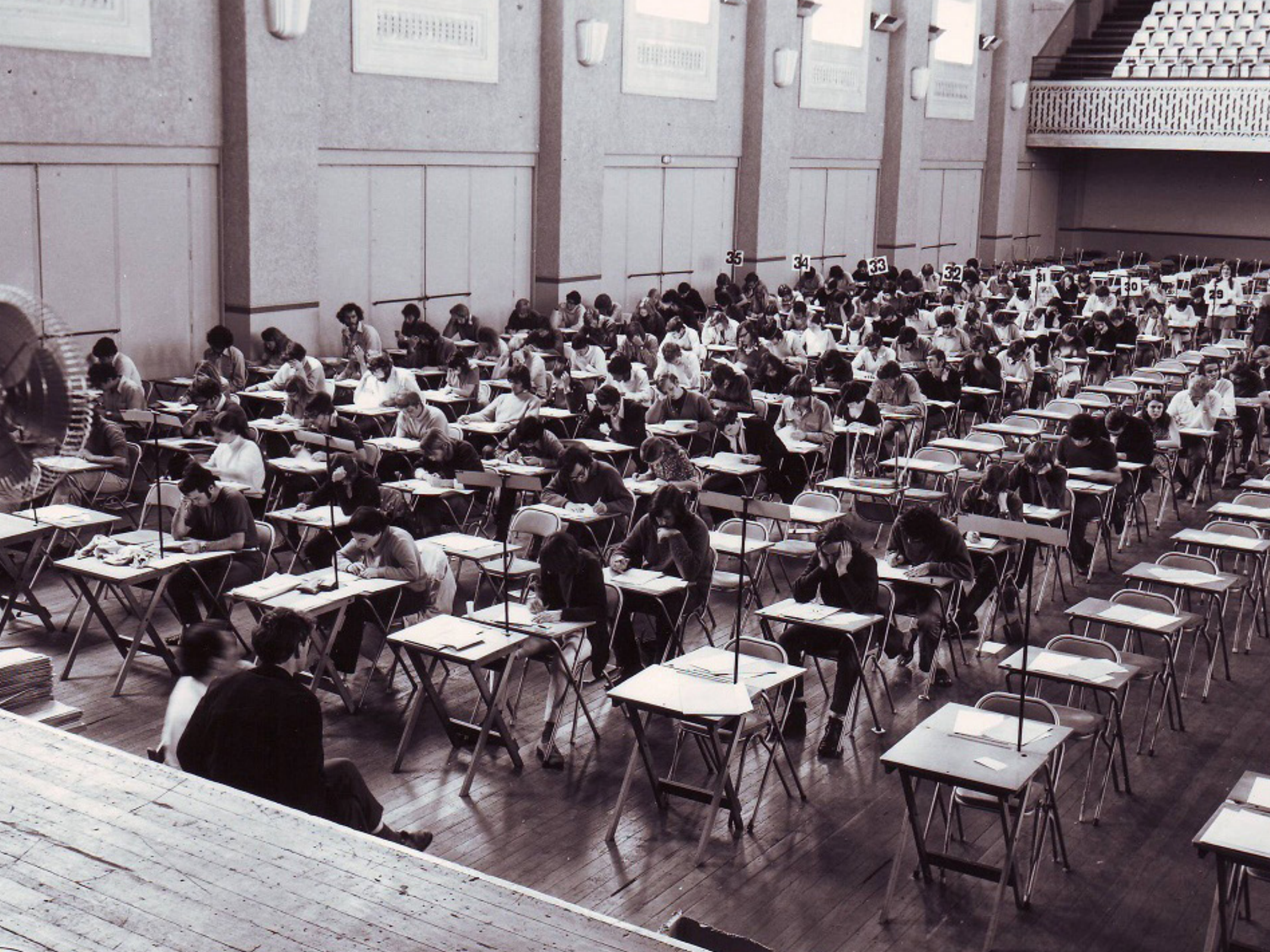
What are the factors that determine the...
A... group...
The...
The...
The...
The...
The...
The...
The...
The...


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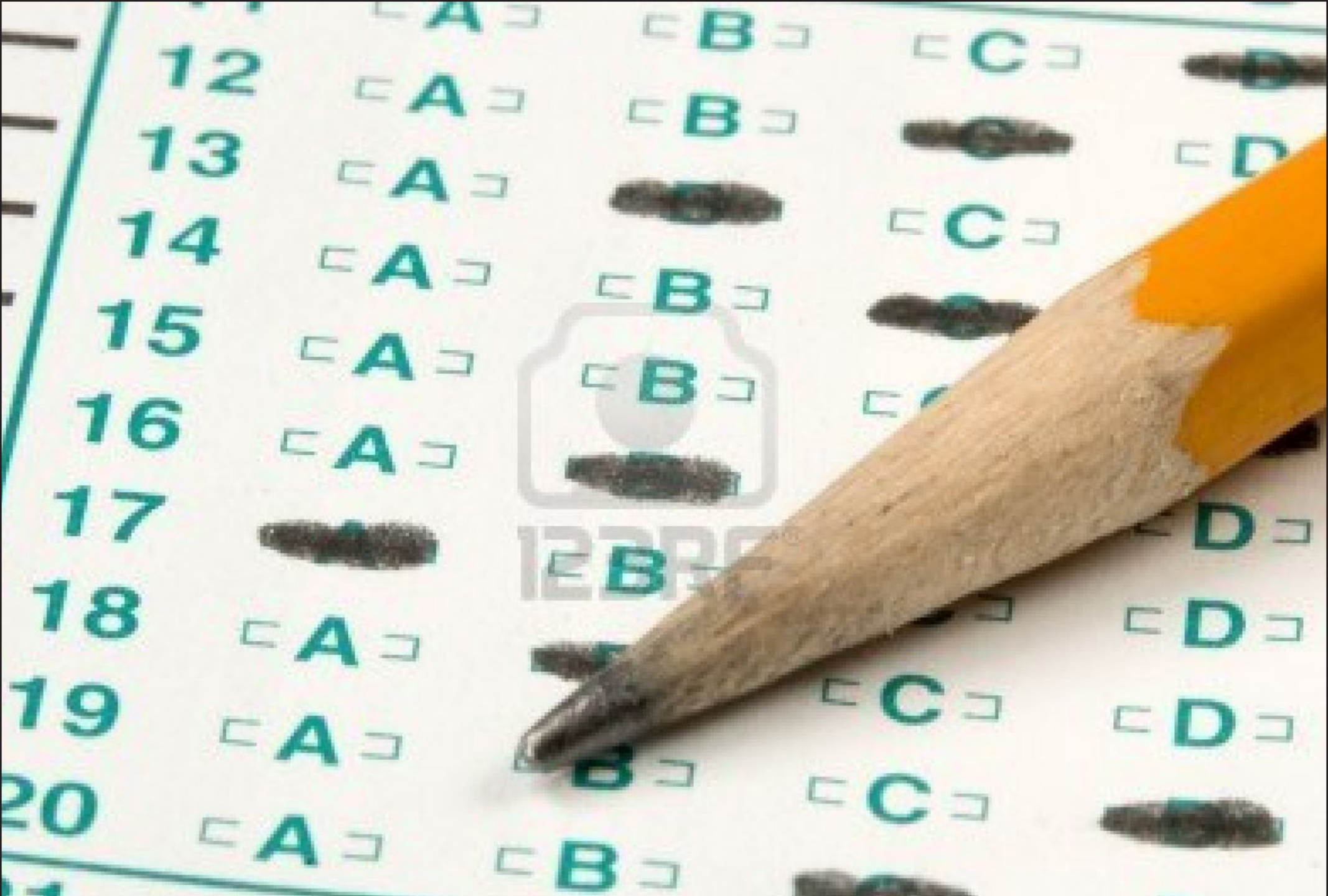




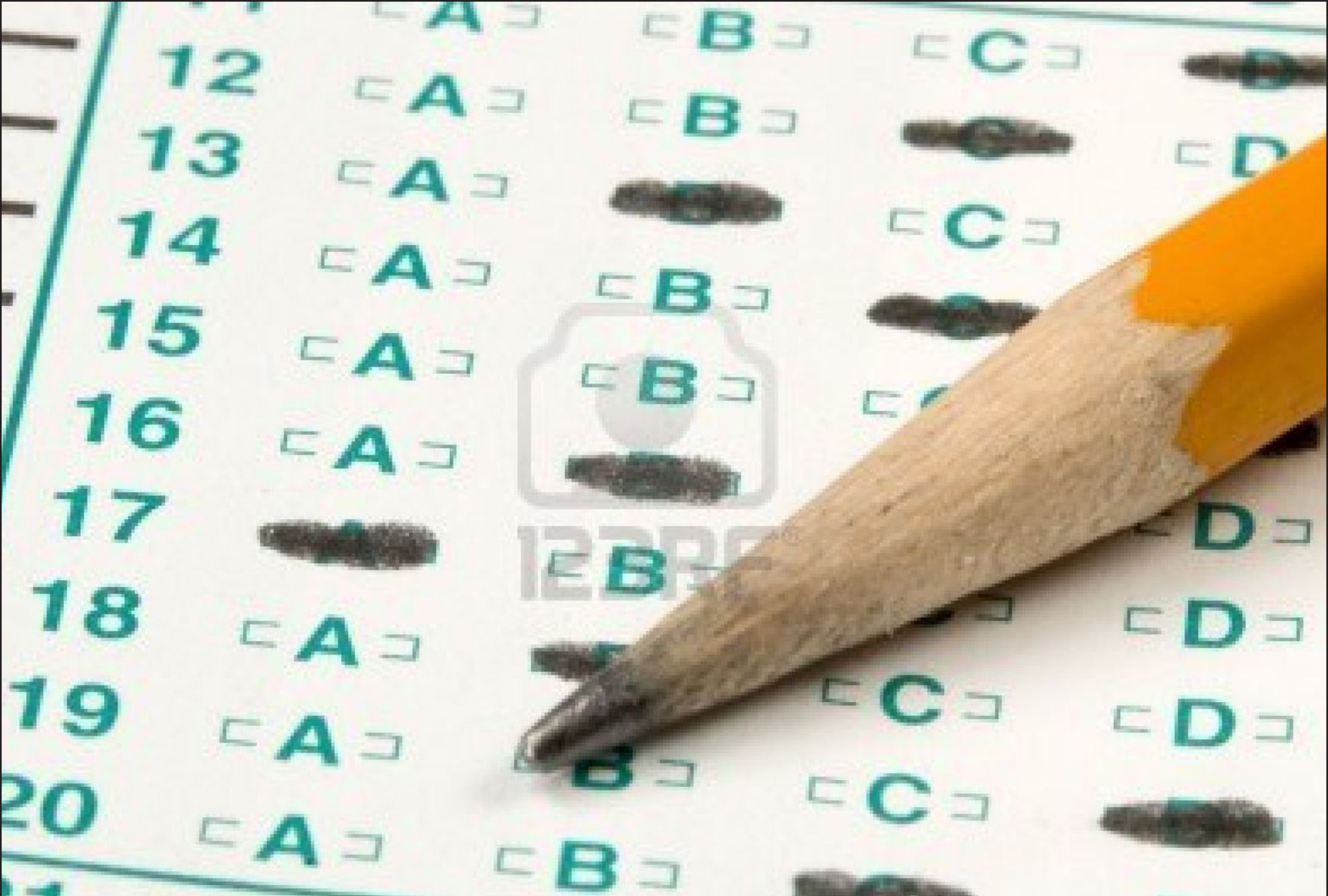




**assessment focussed on ranking and classifying,
not on developing 21st century skills**

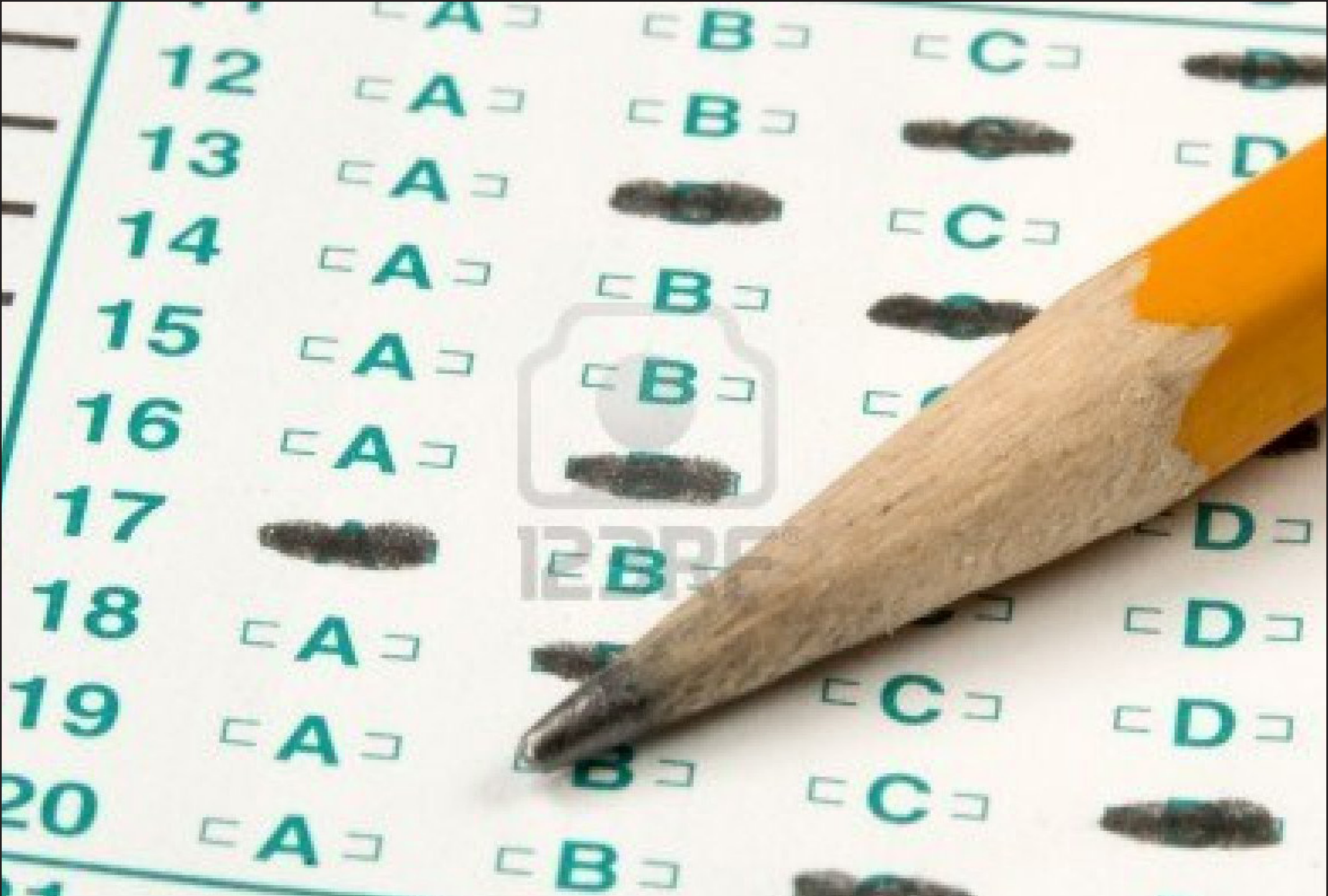


1 purposes



1 purposes

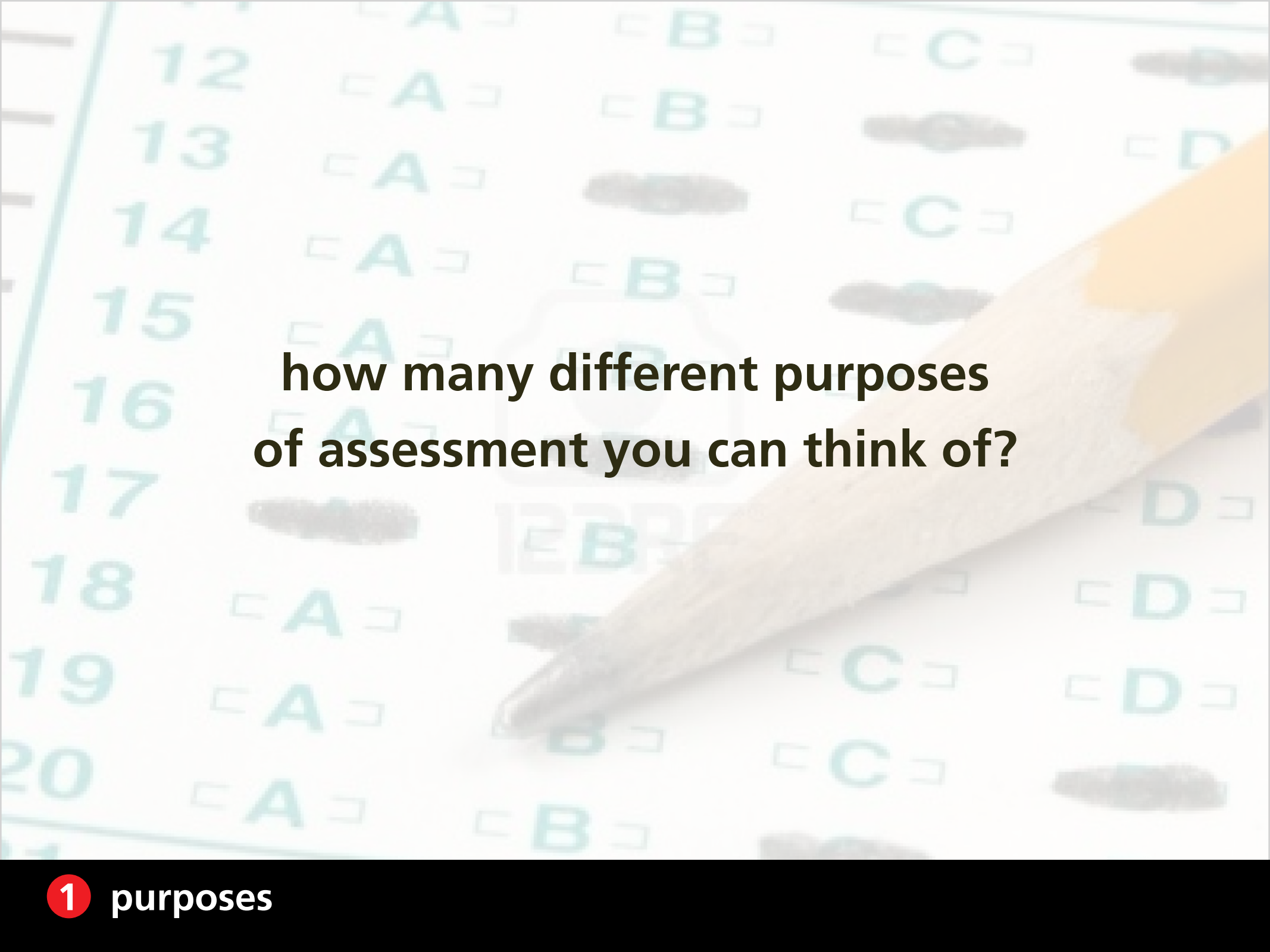
2 problems



1 purposes

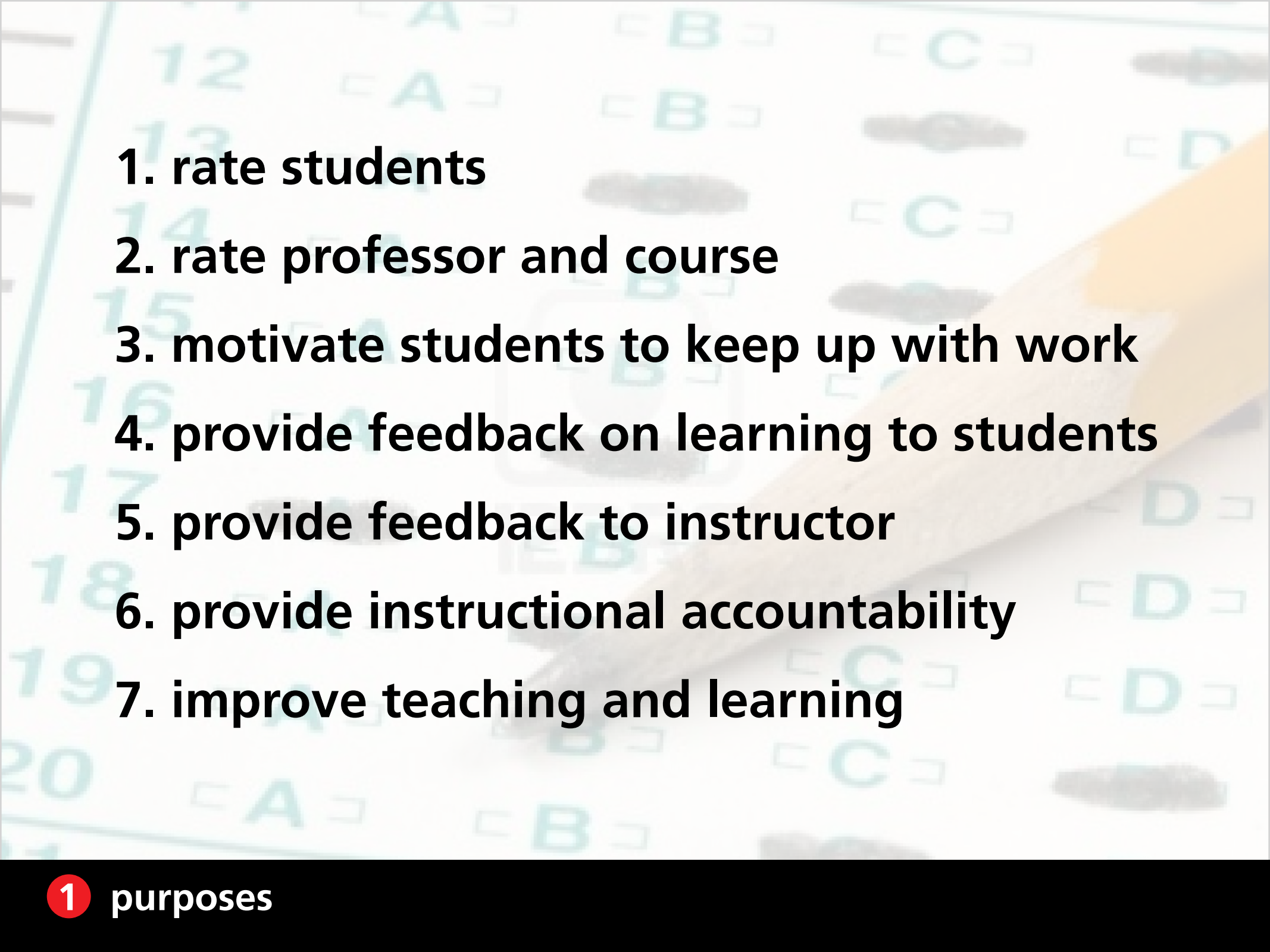
2 problems

3 improvements

A pencil is shown pointing towards a grid of assessment questions. The grid has rows numbered 12 to 20 and columns with headers A, B, C, and D. Each cell contains a question number and a letter in square brackets. The pencil is positioned diagonally across the grid, pointing towards the bottom-left corner.

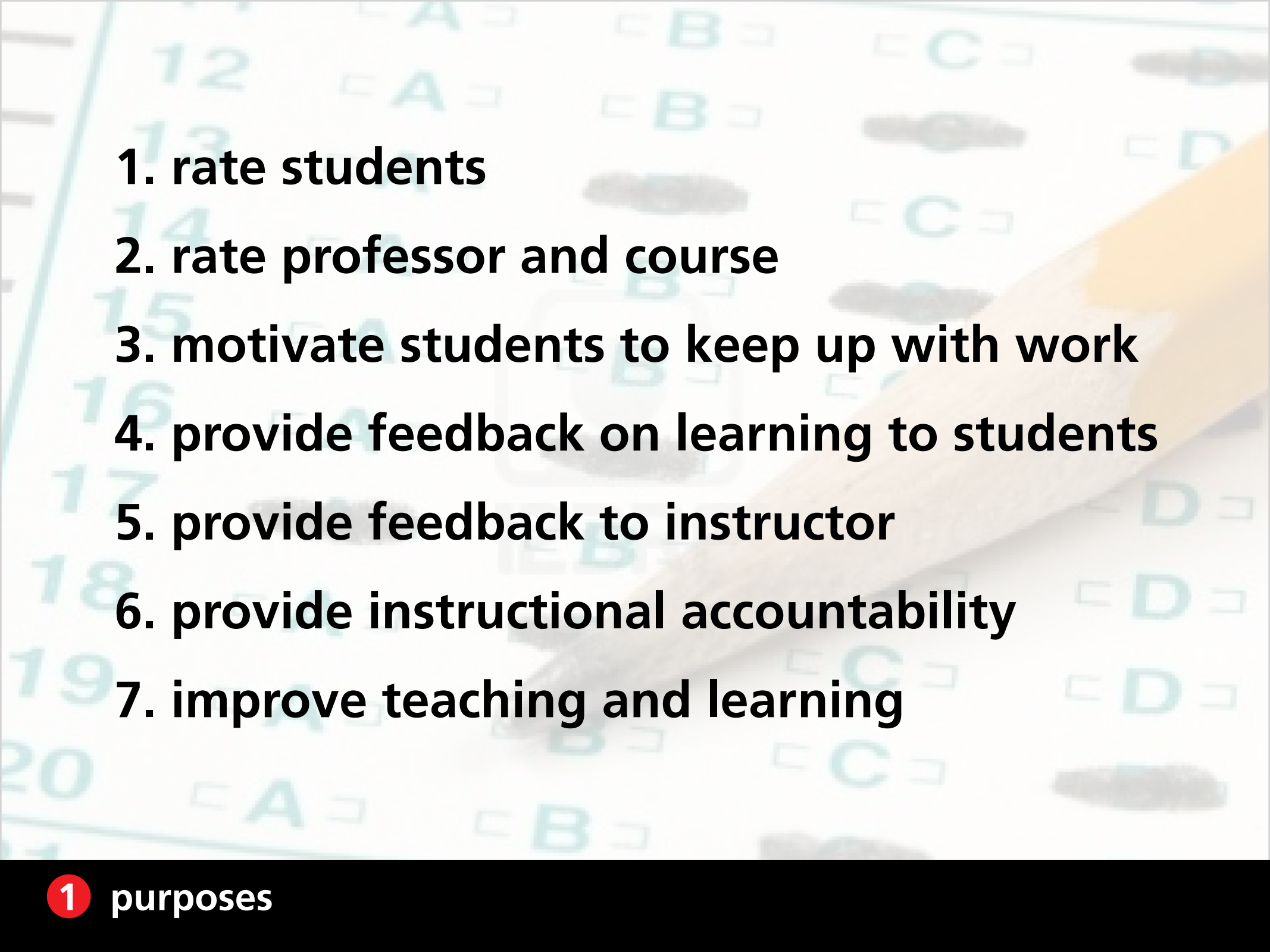
**how many different purposes
of assessment you can think of?**

1 purposes

- 
- 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

- 
- 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

1 purposes

2 problems

problem

outcome

EDUCACION

1 purposes

2 problems

problem

outcome

KNOWN

EDUCACION

1 purposes

2 problems

problem

solution

outcome

KNOWN

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

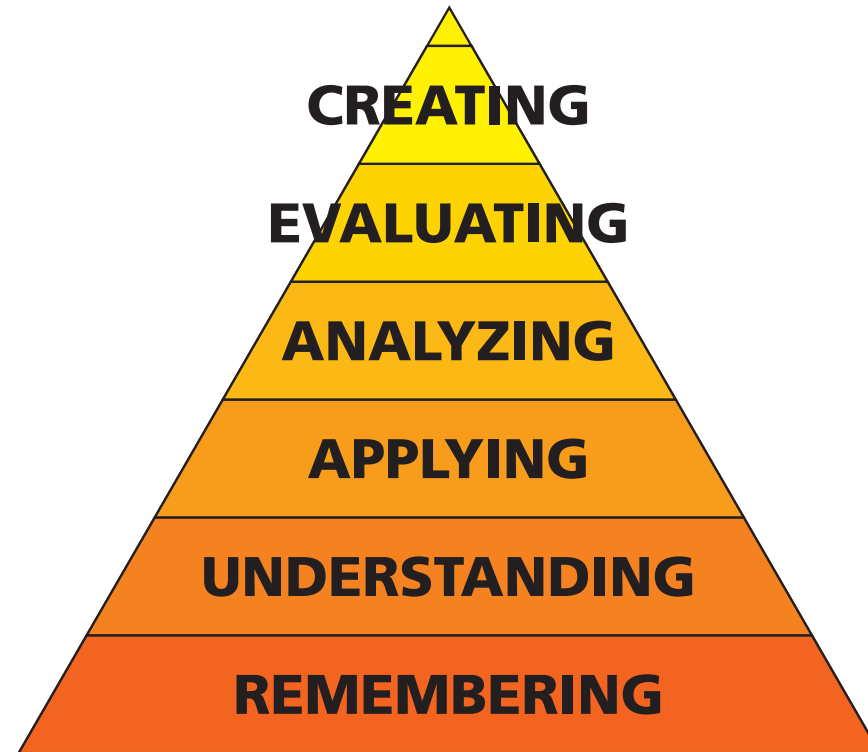
KNOWN

UNKNOWN

1 purposes

2 problems

Thinking skills



1 purposes

2 problems

On a Saturday afternoon, you pull into a parking lot with unmetered spaces near a shopping area. You circle around, but there are no empty spots. You decide to wait at one end of the lot, where you can see (and command) about 20 spaces.

1 purposes

2 problems

On a Saturday afternoon, you pull into a parking lot with unmetered spaces near a shopping area. You circle around, but there are no empty spots. You decide to wait at one end of the lot, where you can see (and command) about 20 spaces.

How long do you have to wait before someone frees up a space?

On a Saturday afternoon, you pull into a parking lot with unmetered spaces near a shopping area. You circle around, but there are no empty spots. You decide to wait at one end of the lot, where you can see (and command) about 20 spaces.

How long do you have to wait before someone frees up a space?

Requires:

Assumptions

Developing a model

Applying that model

On a Saturday afternoon, you pull into a parking lot with unmetered spaces near a shopping area. You circle around, but there are no empty spots. You decide to wait at one end of the lot, where you can see (and command) about 20 spaces.

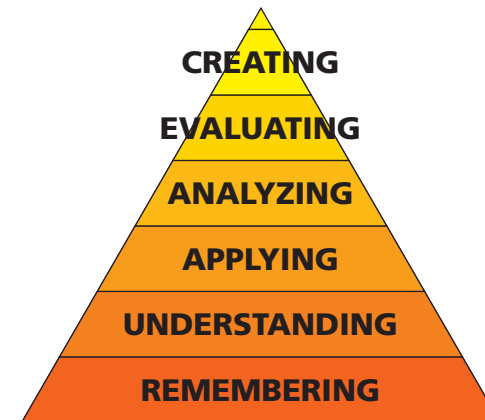
How long do you have to wait before someone frees up a space?

Requires:

Assumptions

Developing a model

Applying that model



On a Saturday afternoon, you pull into a parking lot with unmetered spaces near a shopping area. You circle around, but there are no empty spots. You decide to wait at one end of the lot, where you can see (and command) about 20 spaces. **On average people shop for 2 hours.**

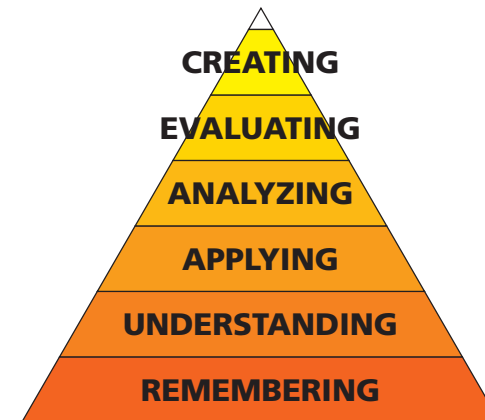
How long do you have to wait before someone frees up a space?

Requires:

Assumptions

Developing a model

Applying that model



On a Saturday afternoon, you pull into a parking lot with unmetered spaces near a shopping area. You circle around, but there are no empty spots. You decide to wait at one end of the lot, where you can see (and command) about 20 spaces. On average people shop for 2 hours.

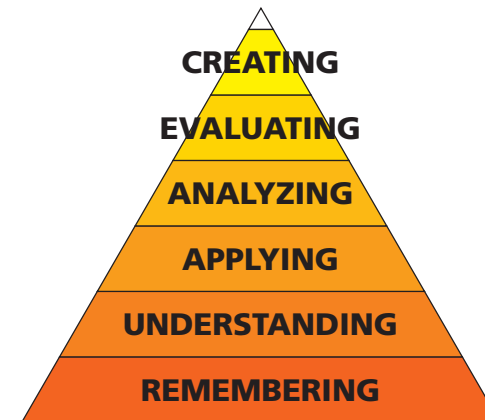
Assuming people leave at regularly-spaced intervals, how long do you have to wait before someone frees up a space?

Requires:

Assumptions

Developing a model

Applying that model



On a Saturday afternoon, you pull into a parking lot with unmetered spaces near a shopping area. You circle around, but there are no empty spots. You decide to wait at one end of the lot, where you can see (and command) about 20 spaces. On average people shop for 2 hours.

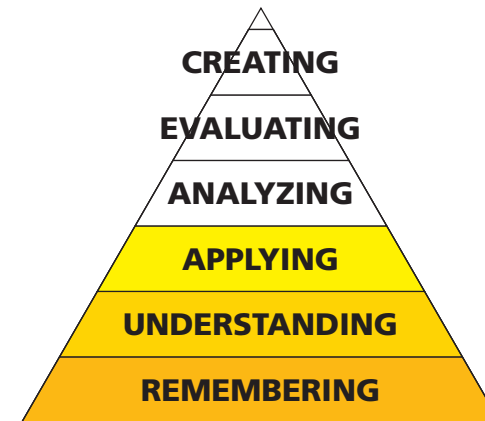
Assuming people leave at regularly-spaced intervals, how long do you have to wait before someone frees up a space?

Requires:

Assumptions

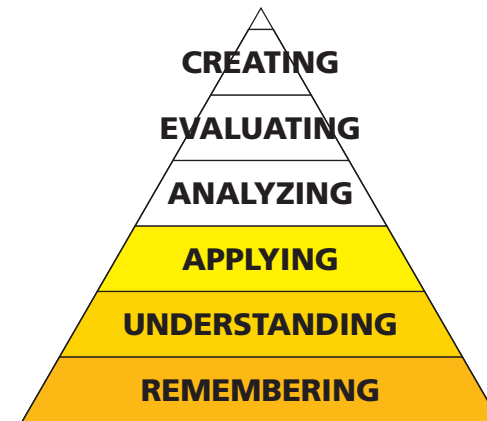
Developing a model

Applying that model



On a Saturday afternoon, you pull into a parking lot with unmetered spaces near a shopping area, where people are known to shop, on average, for 2 hours. You circle around, but there are no empty spots. You decide to wait at one end of the lot, where you can see (and command) about 20 spaces.

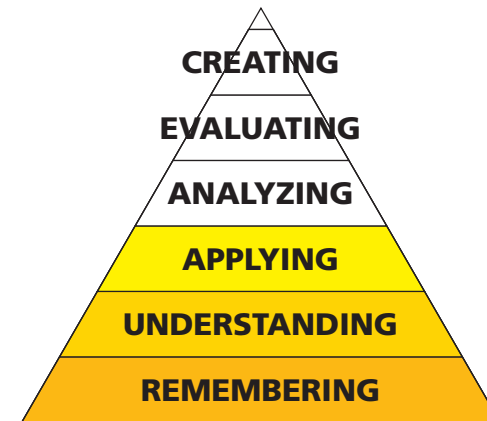
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How long do you have to wait before someone frees up a space?

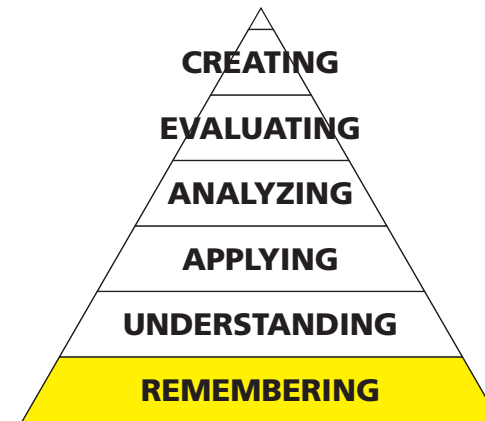
$$t_{wait} = \frac{T_{shop}}{N_{spaces}}$$

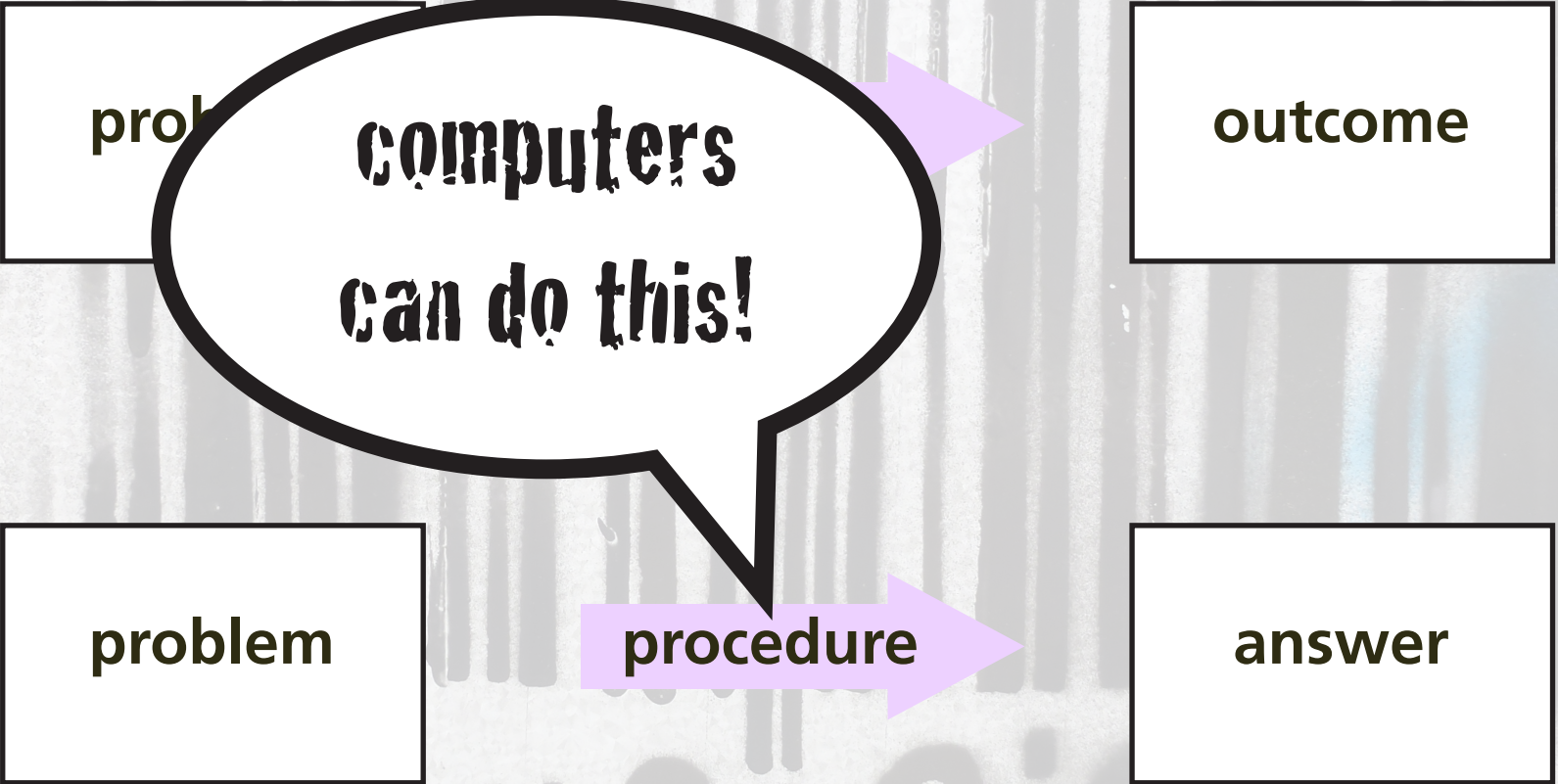


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How long do you have to wait before someone frees up a space?

$$t_{wait} = \frac{T_{shop}}{N_{spaces}}$$





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

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:

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

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

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

Since the third integral equals 0.

⑤ Direction vectors for the plane are

$$(1) \quad (1) \quad (0) \quad (0) \quad (1) \quad (-1)$$

high-stakes examinations promote cramming



1 purposes

2 problems

A person with long dark hair is sitting at a desk, leaning over an open book. They are holding a blue pen in their right hand and have their left hand on the page. A white mug is on the desk to the left. A pair of red-rimmed glasses is on the desk in front of the book. In the background, a round analog clock is visible, showing the time is approximately 10:10. The scene is dimly lit, suggesting a quiet study environment.

information stored in short-term memory

1 purposes

2 problems



no retention

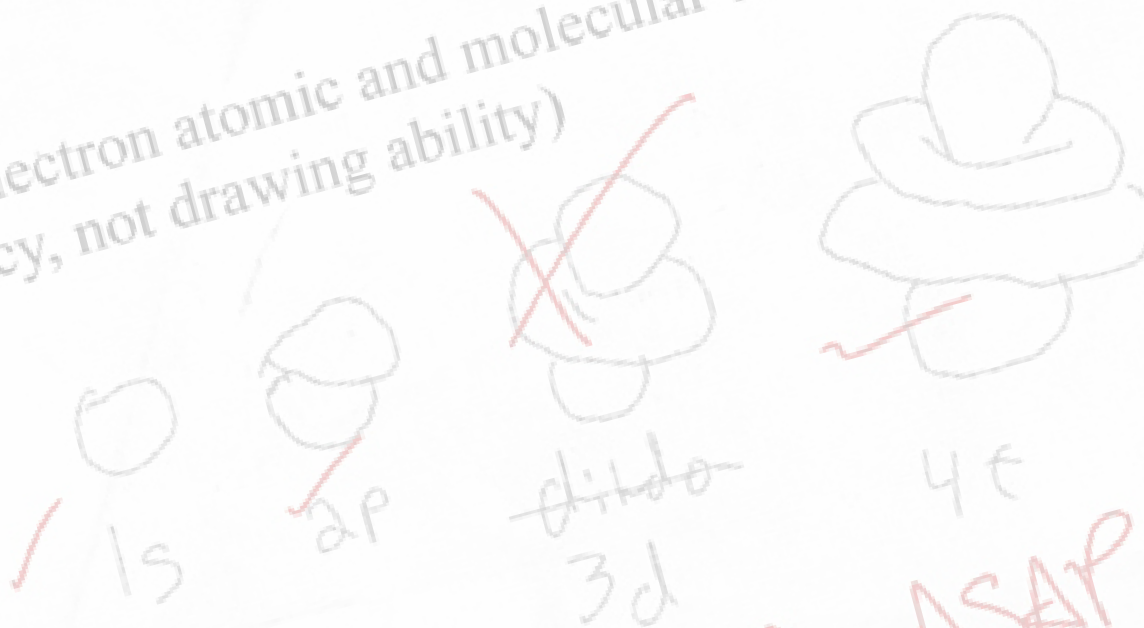
information stored in short-term memory

no transfer

1 purposes

2 problems

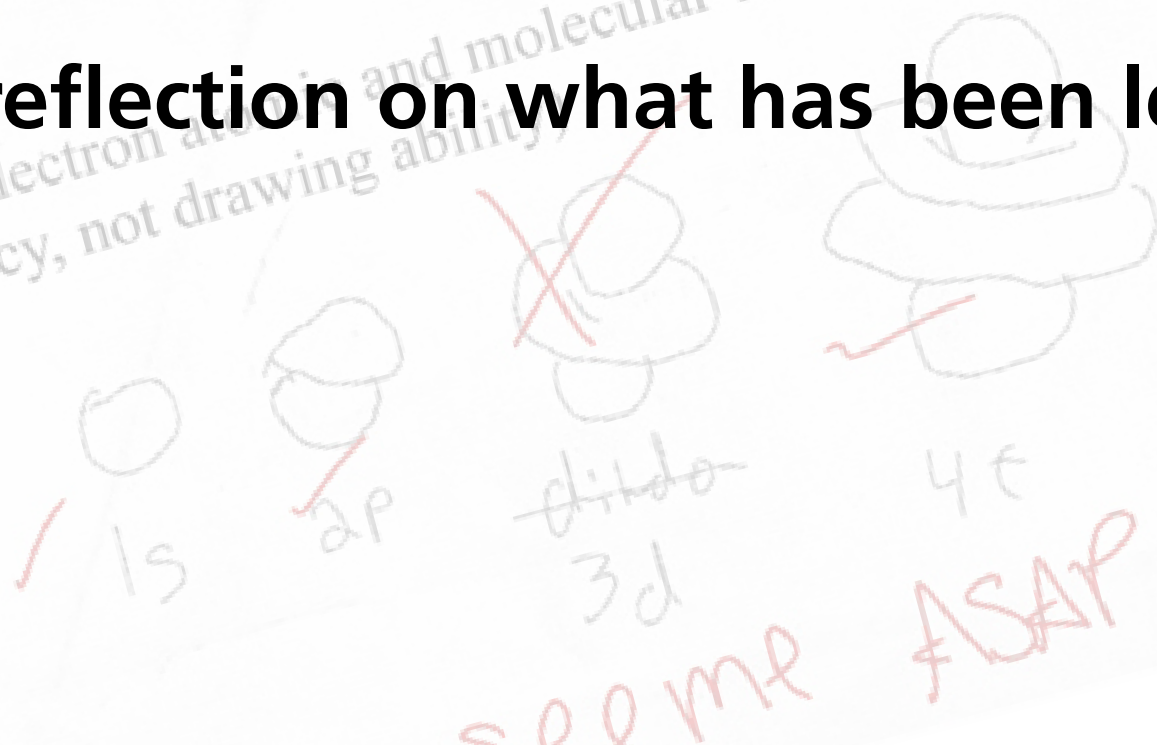
grades: measure of standing relative to others



1 purposes

2 problems

grades: measure of standing relative to others
feedback: reflection on what has been learnt



1 purposes

2 problems

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

... Makes me
... in humanity

... (also) ...
... the three important concepts that the Law of conservation ...

Equilibrium (boring)
Thermodynamics (boring)

Kinetics (bow-chicka-wow-wow)

Describe the Law of definite composition (Dalton's Law):

A chemical compound always contains exactly the same proportion of elements by mass.

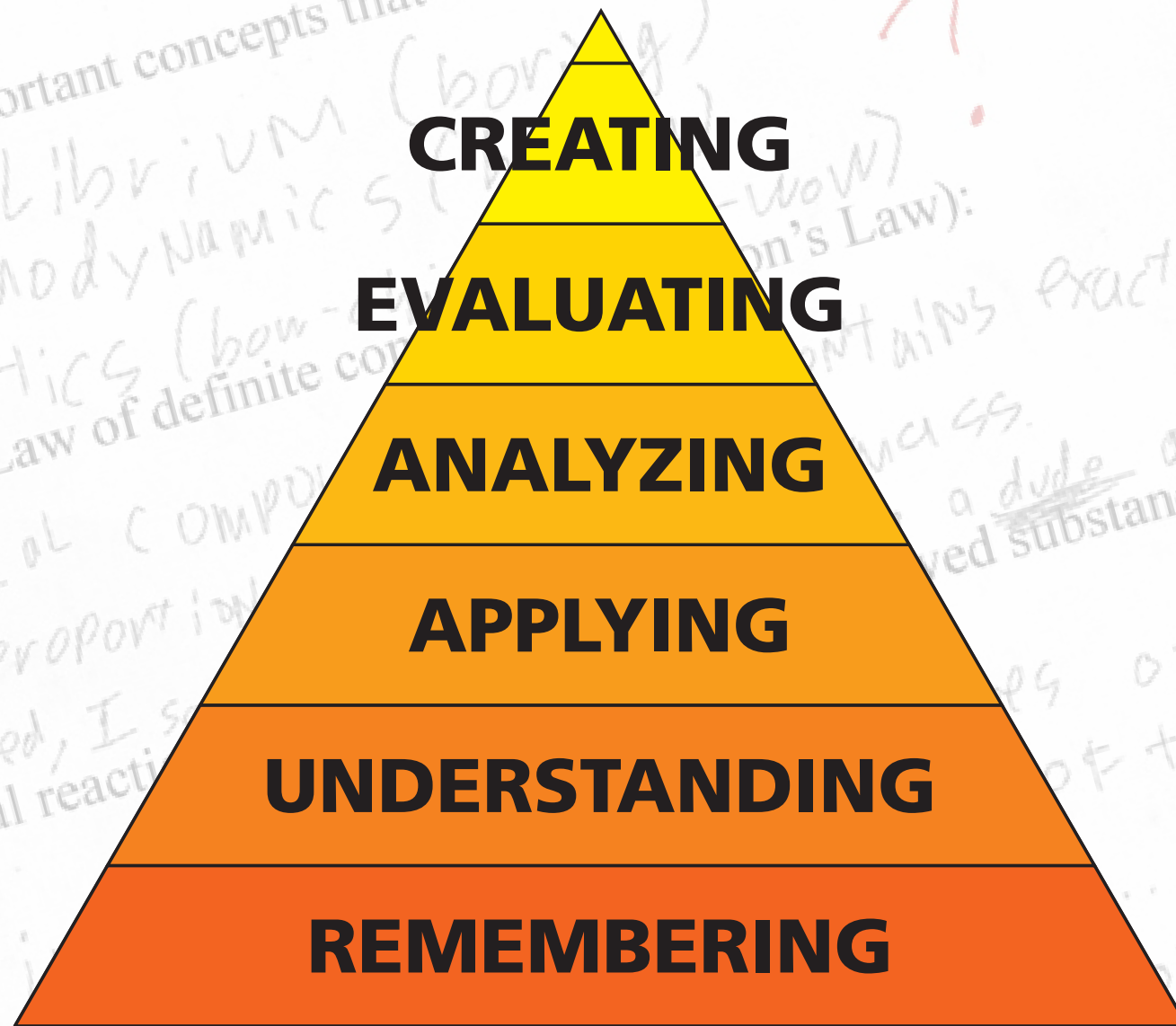
5 pts) A chemical reaction does one of two things to involved substances:
Unrelated, I saw my T.A., Jimmy, kissing a dude at a party last Friday

Increases or decreases the energy of the substance involved ... sometimes in the form of heat or light
... orbitals 1s, 2p, 3d and 4f.

The chick in front of me is wearing a white ...
... state ... thing.

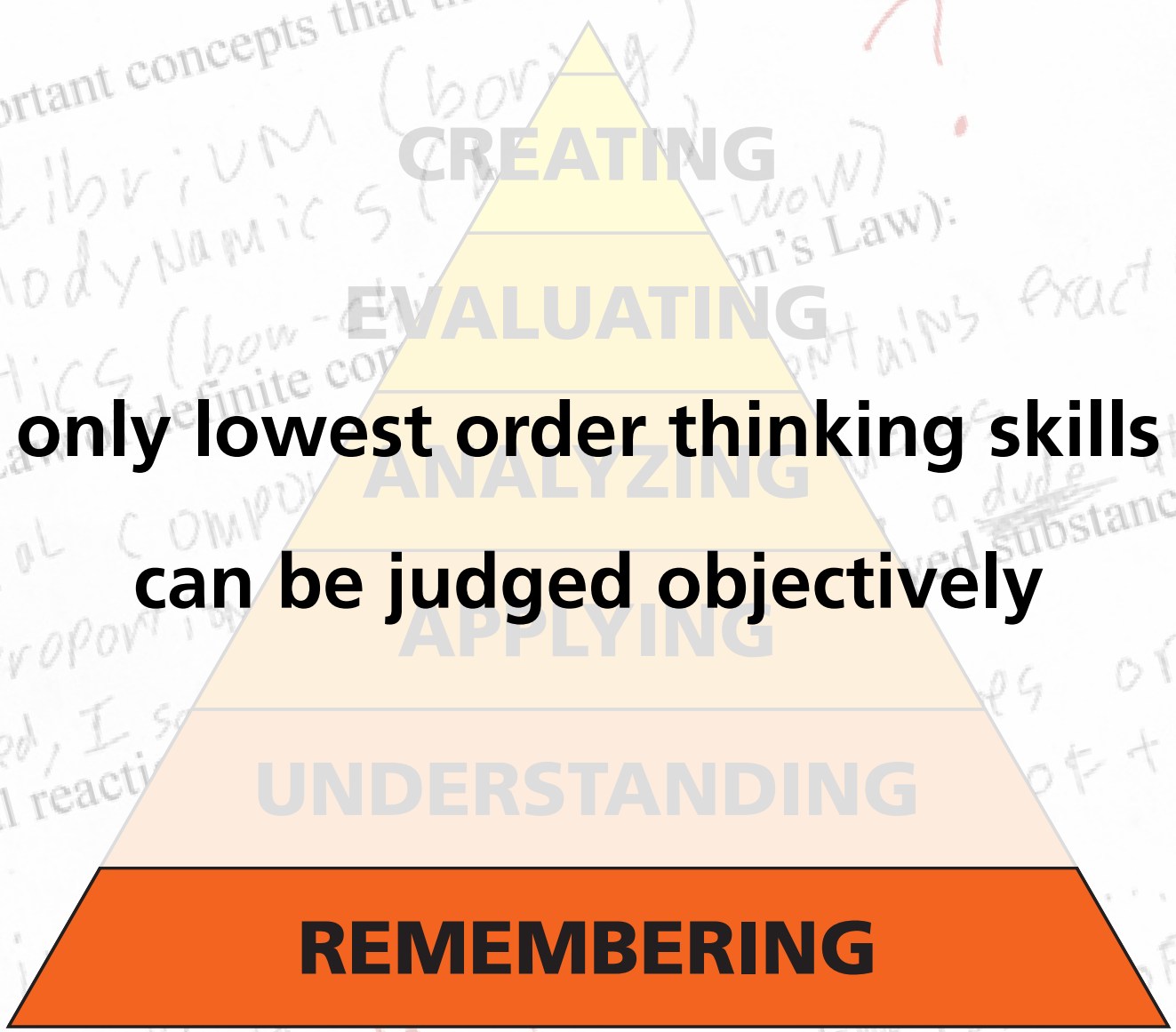
1 purposes

2 problems



1 purposes

2 problems



1 purposes

2 problems

and then there is...

- grade inflation
- cheating

1 purposes

2 problems



1 purposes

2 problems

3 improvements



mimic real life

1 purposes

2 problems

3 improvements



open-book exam

1 purposes

2 problems

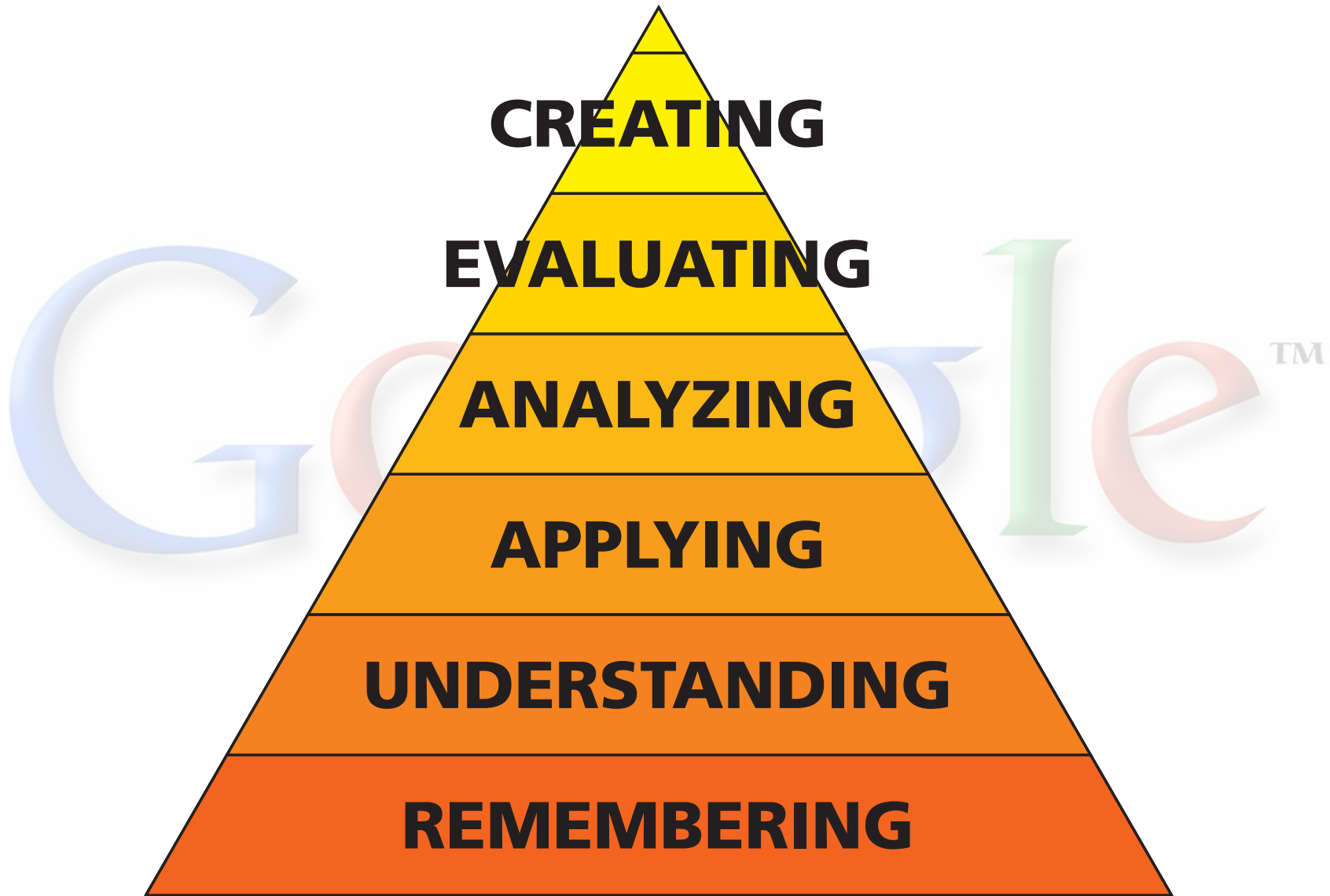
3 improvements

Google™

1 purposes

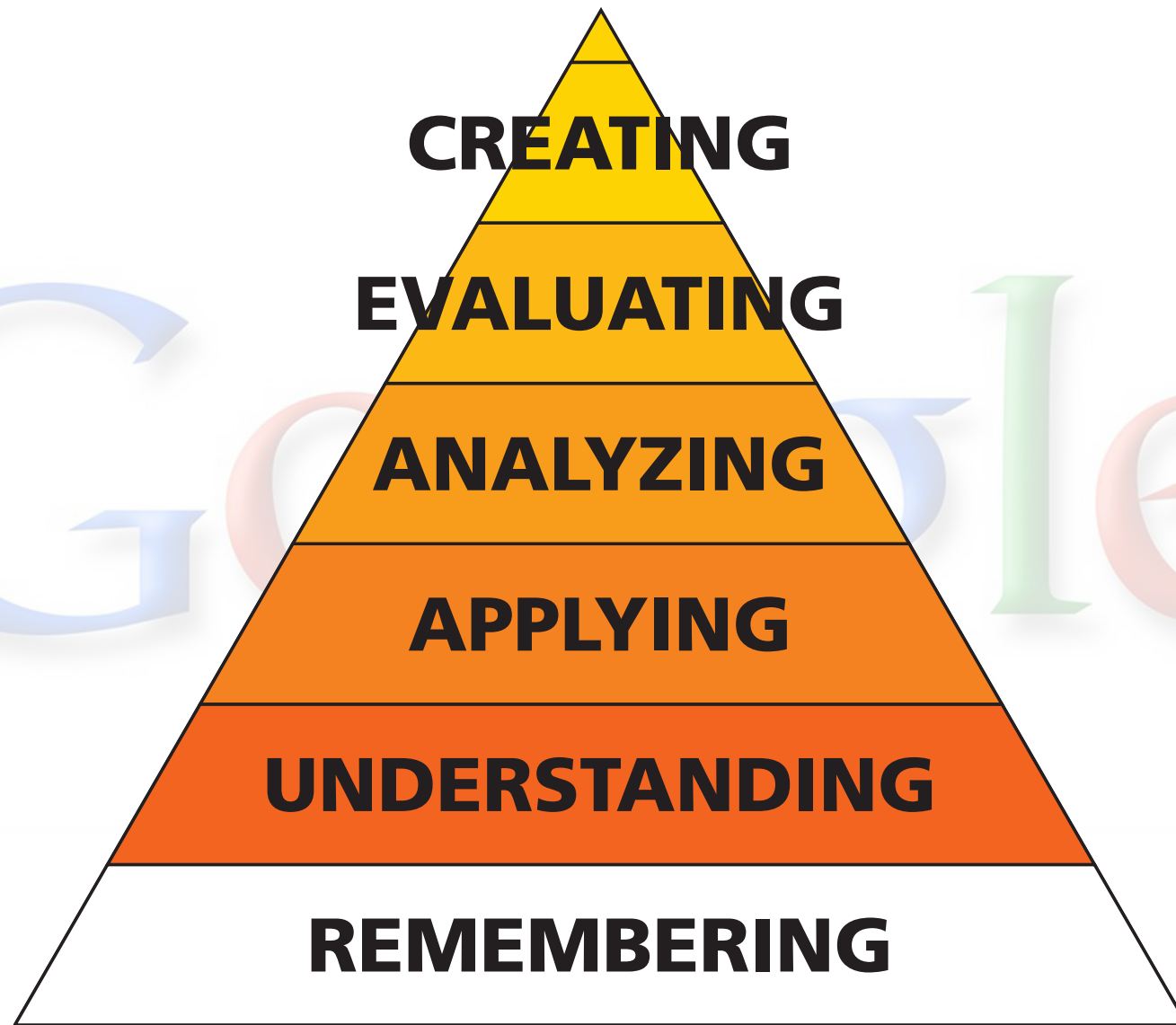
2 problems

3 improvements



1 purposes

2 problems



1 purposes

2 problems



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



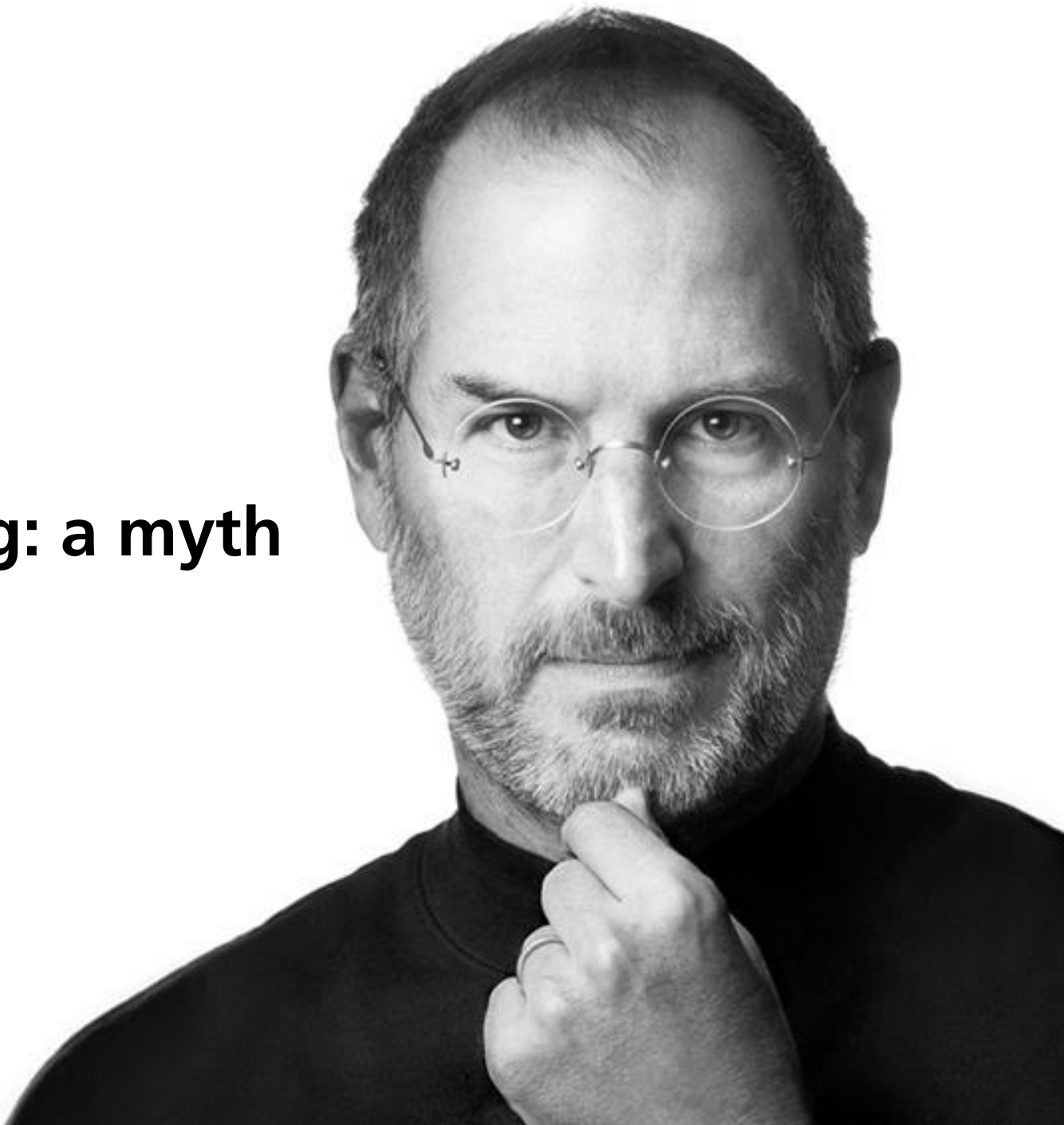
focus on feedback, not ranking

1 purposes

2 problems

3 improvements

objective ranking: a myth

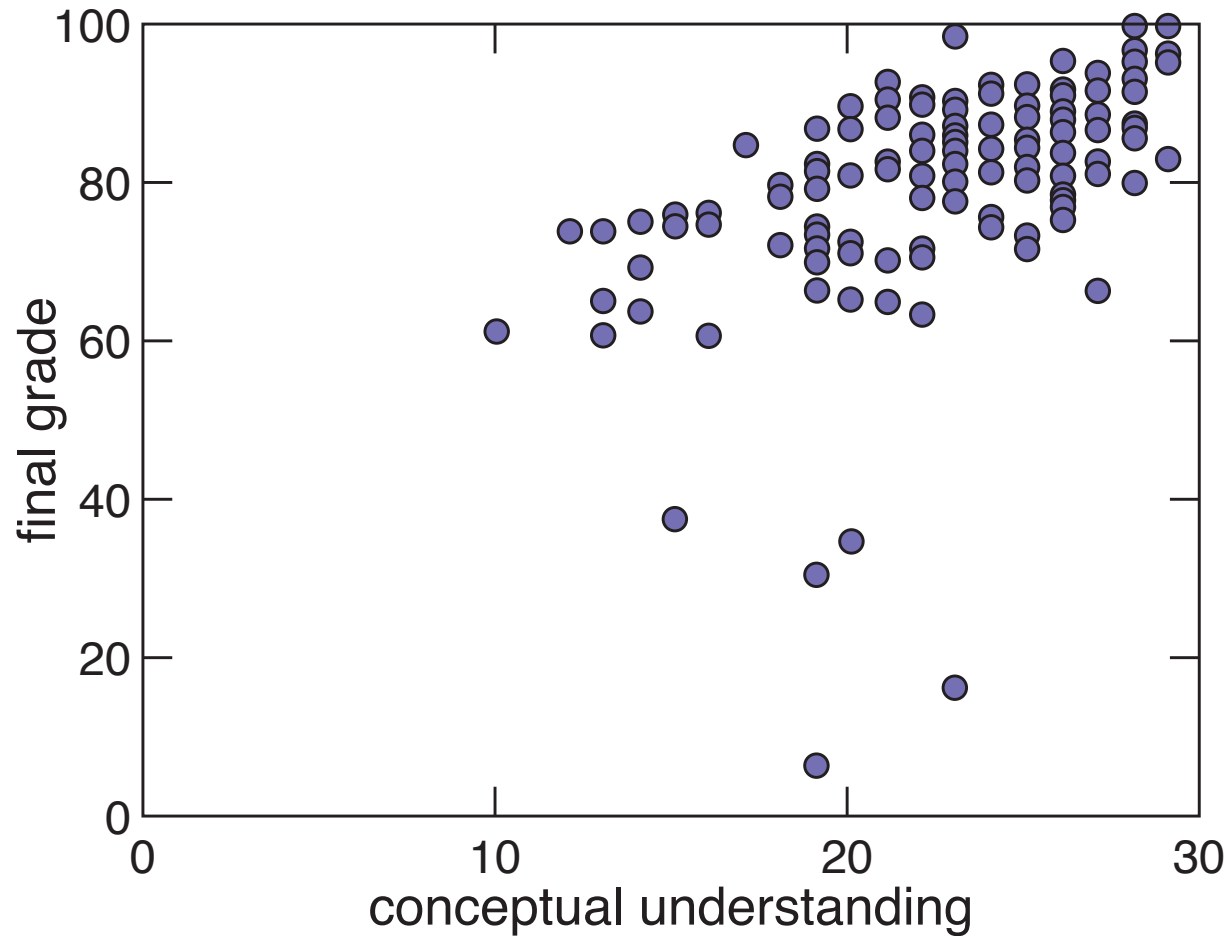


1 purposes

2 problems

3 improvements

2 metrics, 2 results

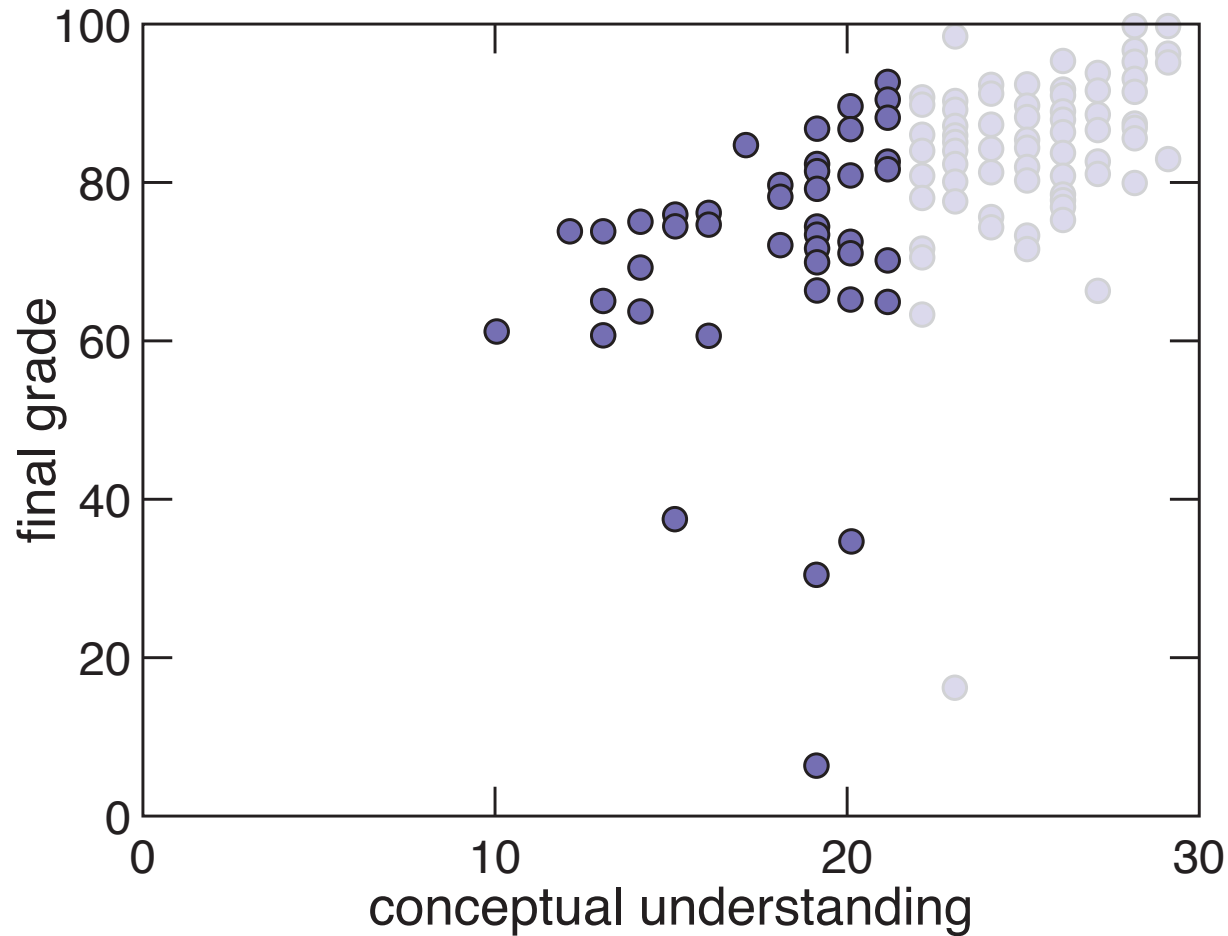


1 purposes

2 problems

3 improvements

Aristotelian thinkers

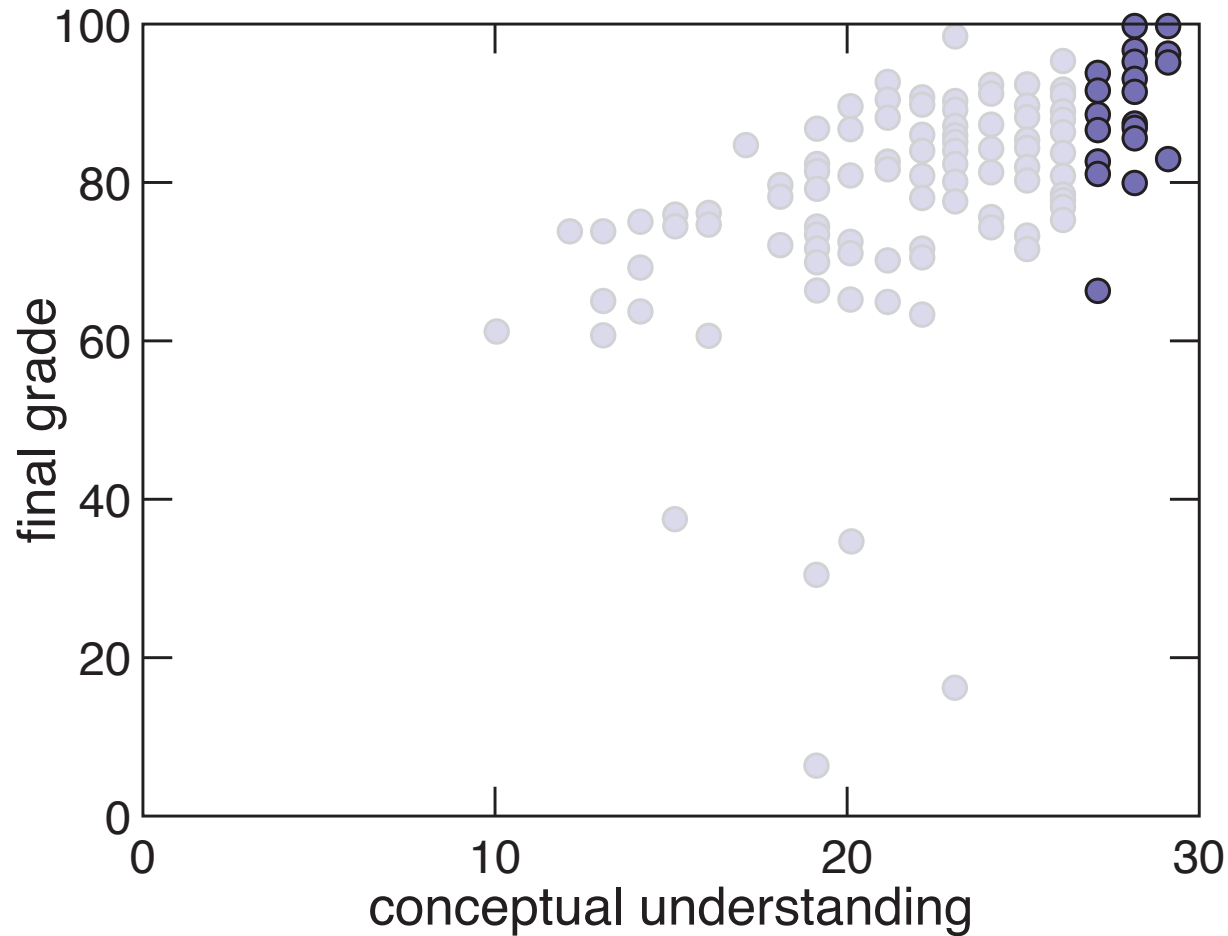


1 purposes

2 problems

3 improvements

top performers, broad grade distribution

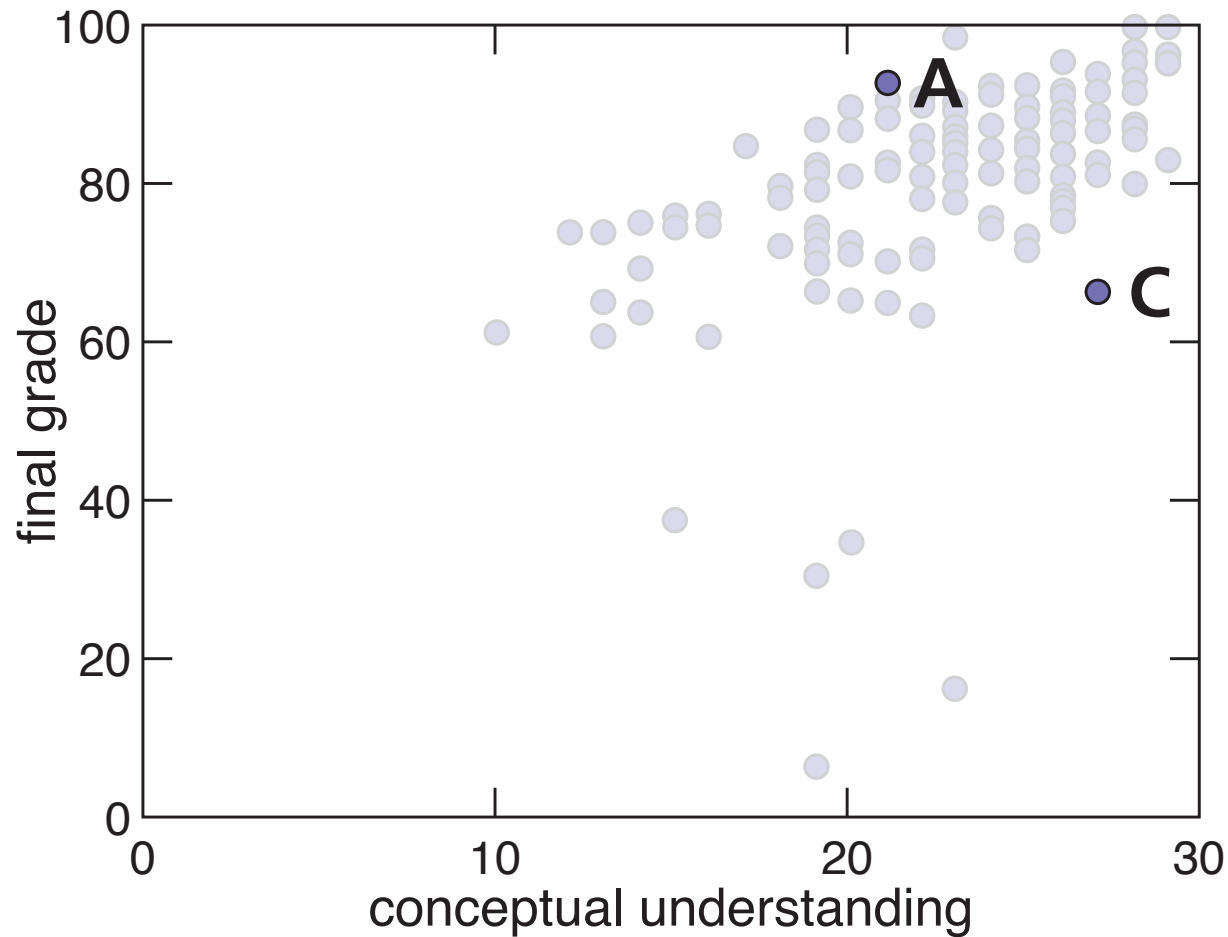


1 purposes

2 problems

3 improvements

objectivity or injustice?



1 purposes

2 problems

3 improvements



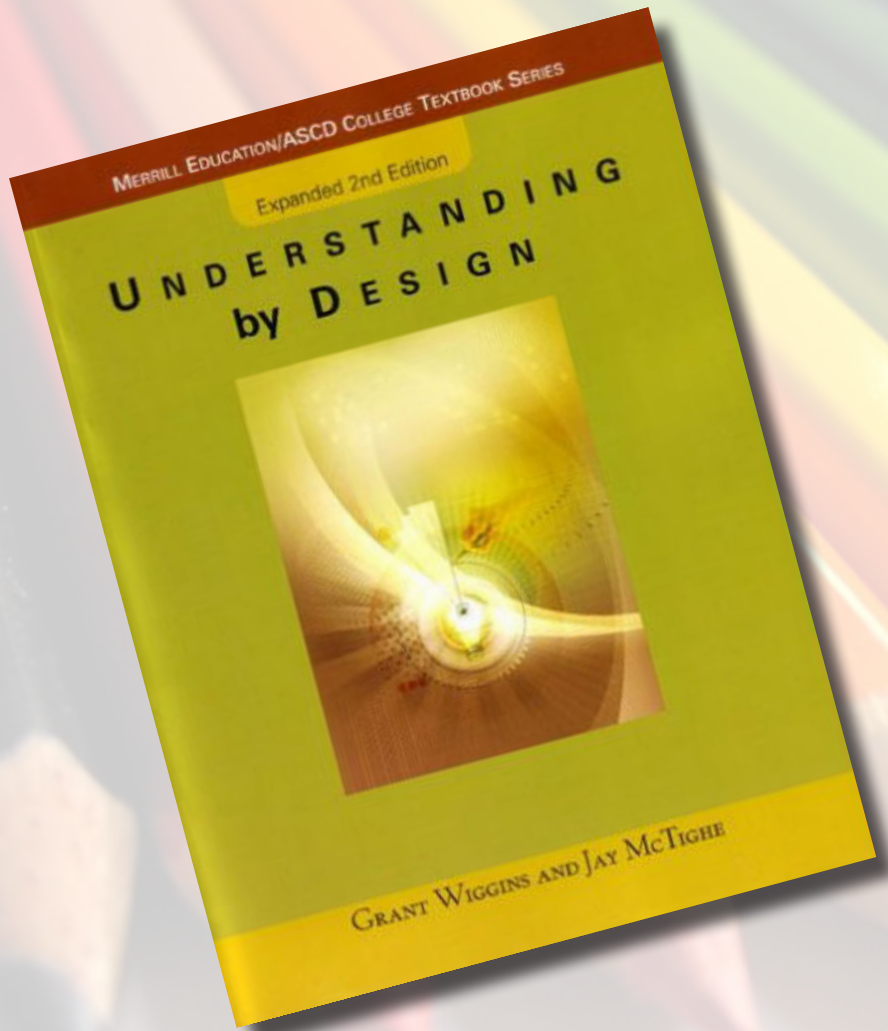
3

focus on skills, not content

1 purposes

2 problems

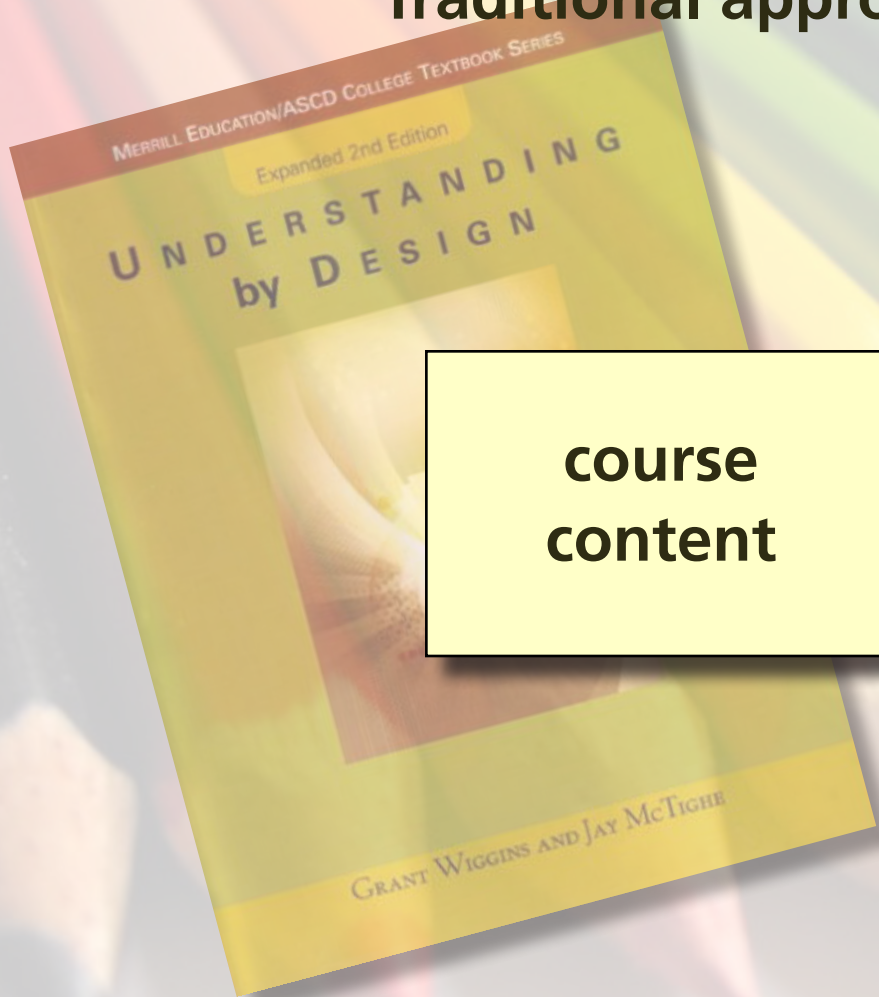
3 improvements



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

- 1 purposes
- 2 problems
- 3 improvements

Traditional approach to course planning



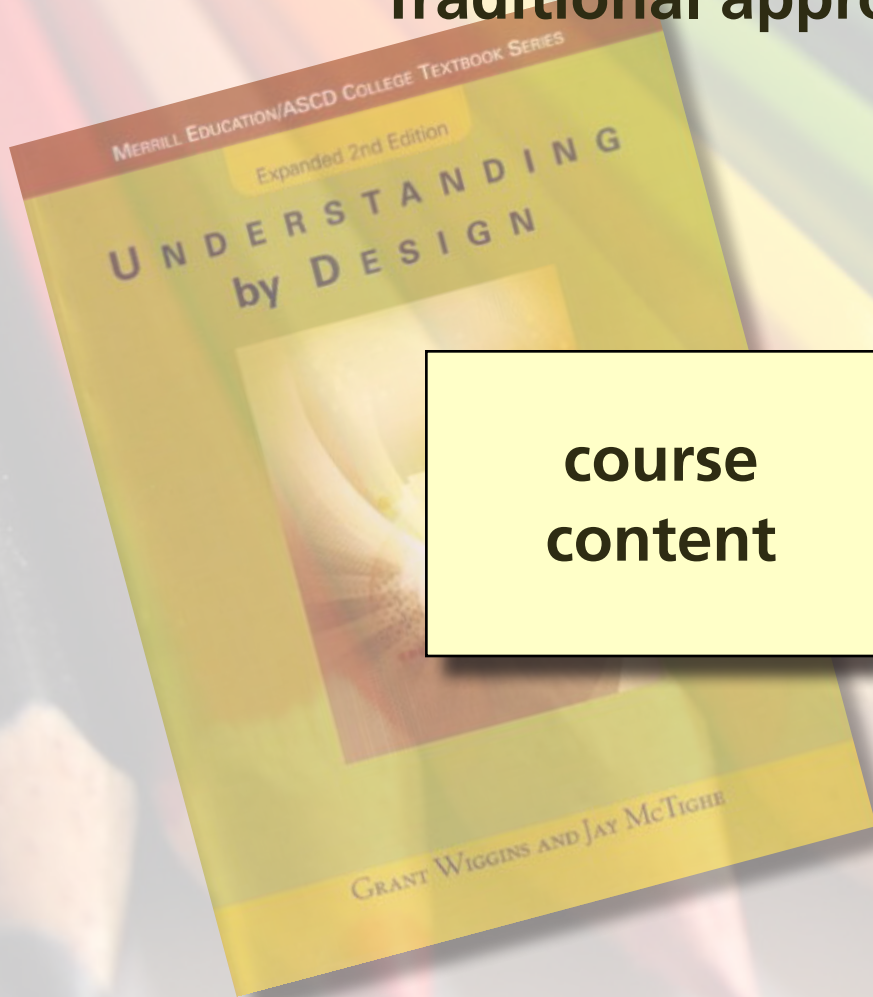
**course
content**

1 purposes

2 problems

3 improvements

Traditional approach to course planning



**course
content**



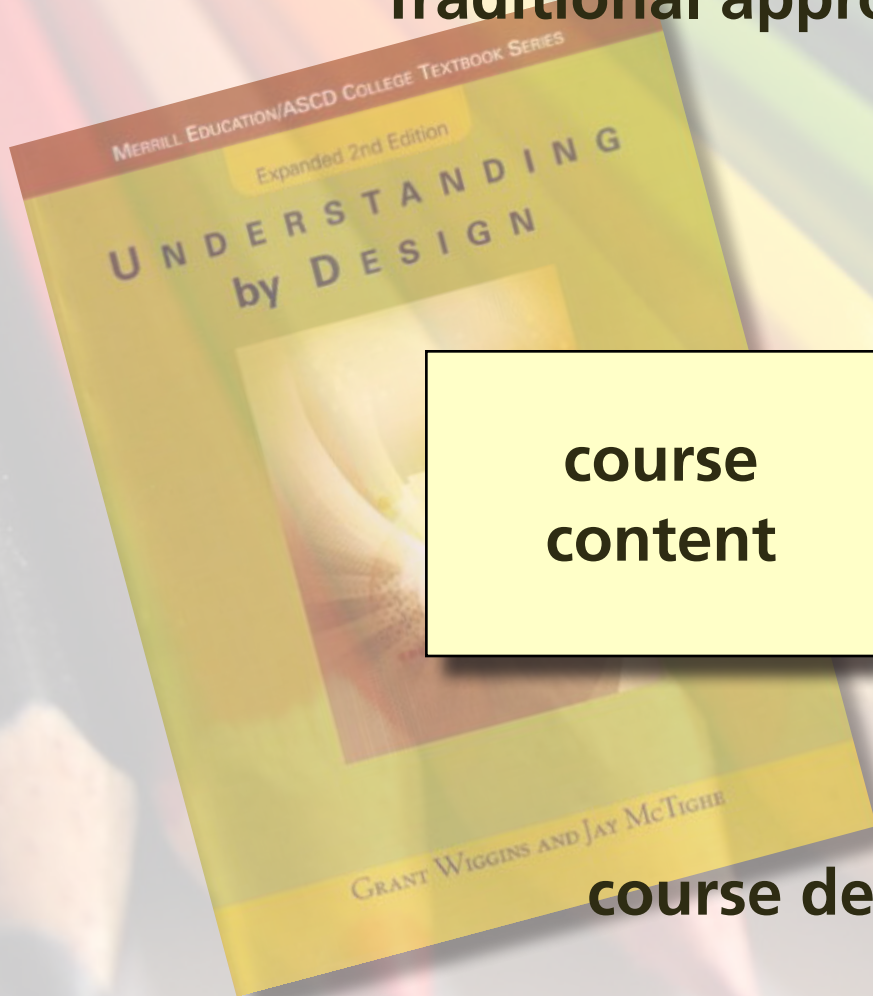
assessment

1 purposes

2 problems

3 improvements

Traditional approach to course planning



**course
content**



assessment

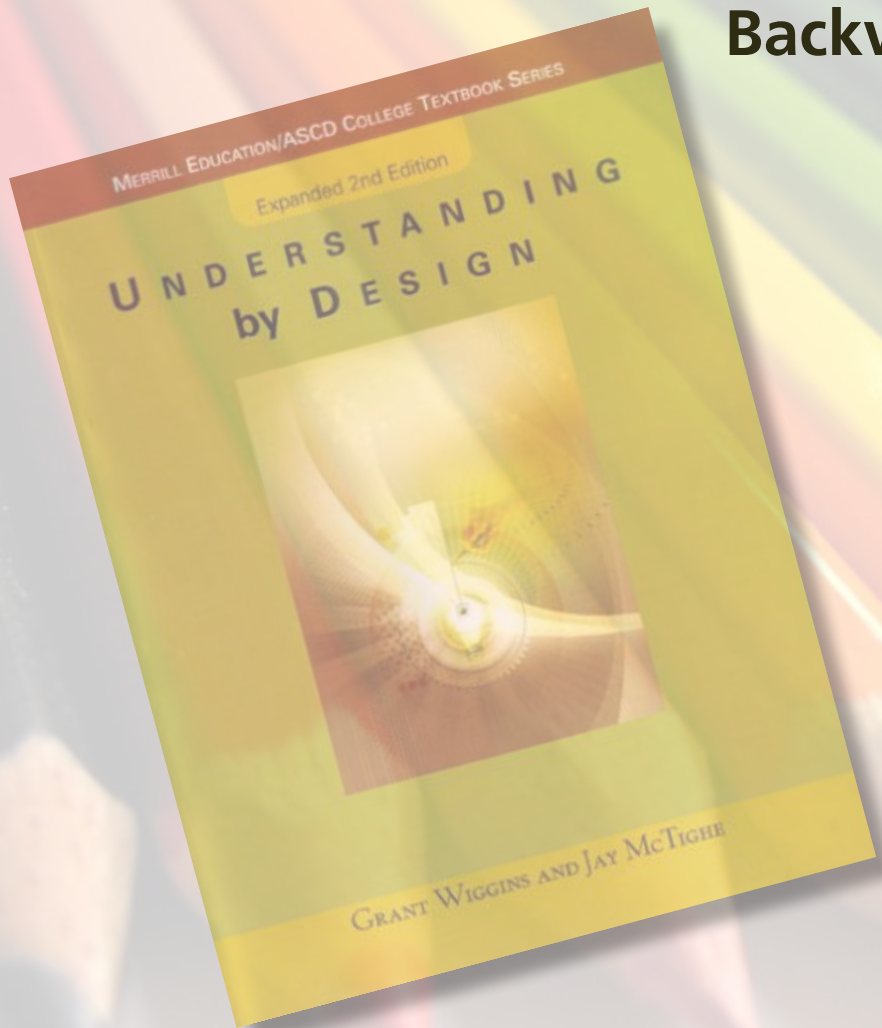
course defined by content

1 purposes

2 problems

3 improvements

Backward design



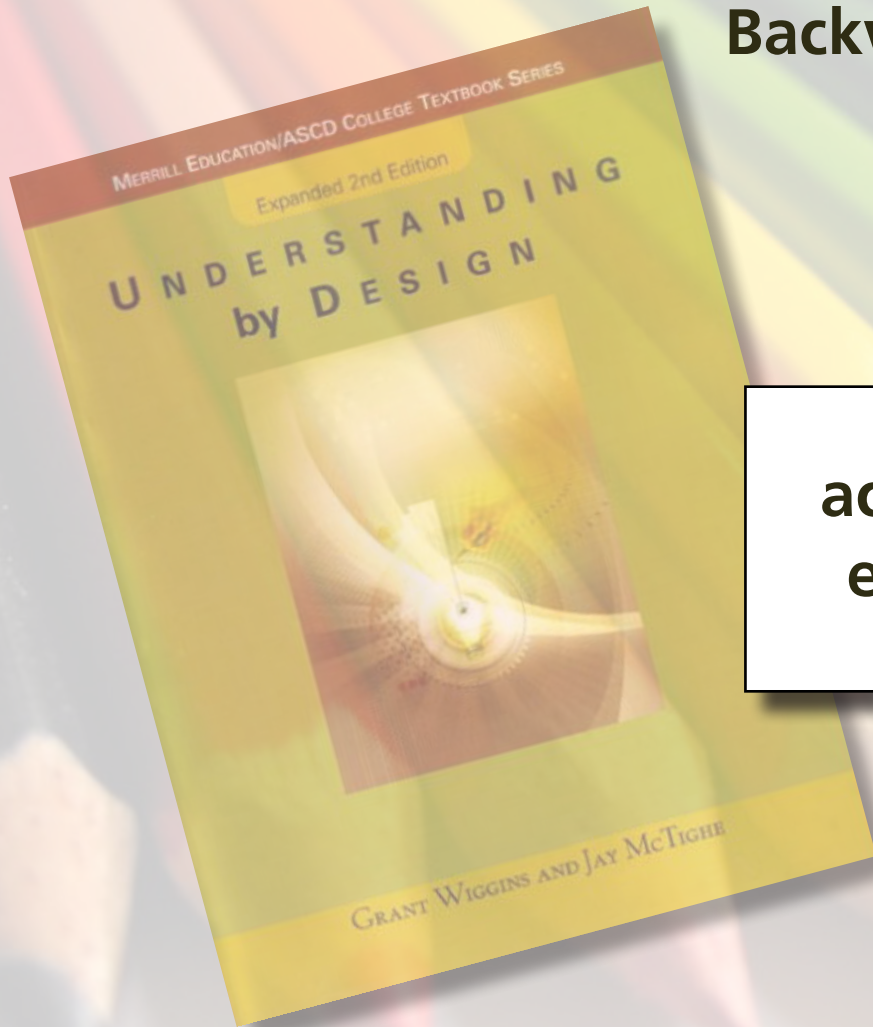
**desired
outcomes**

1 purposes

2 problems

3 improvements

Backward design



acceptable
evidence



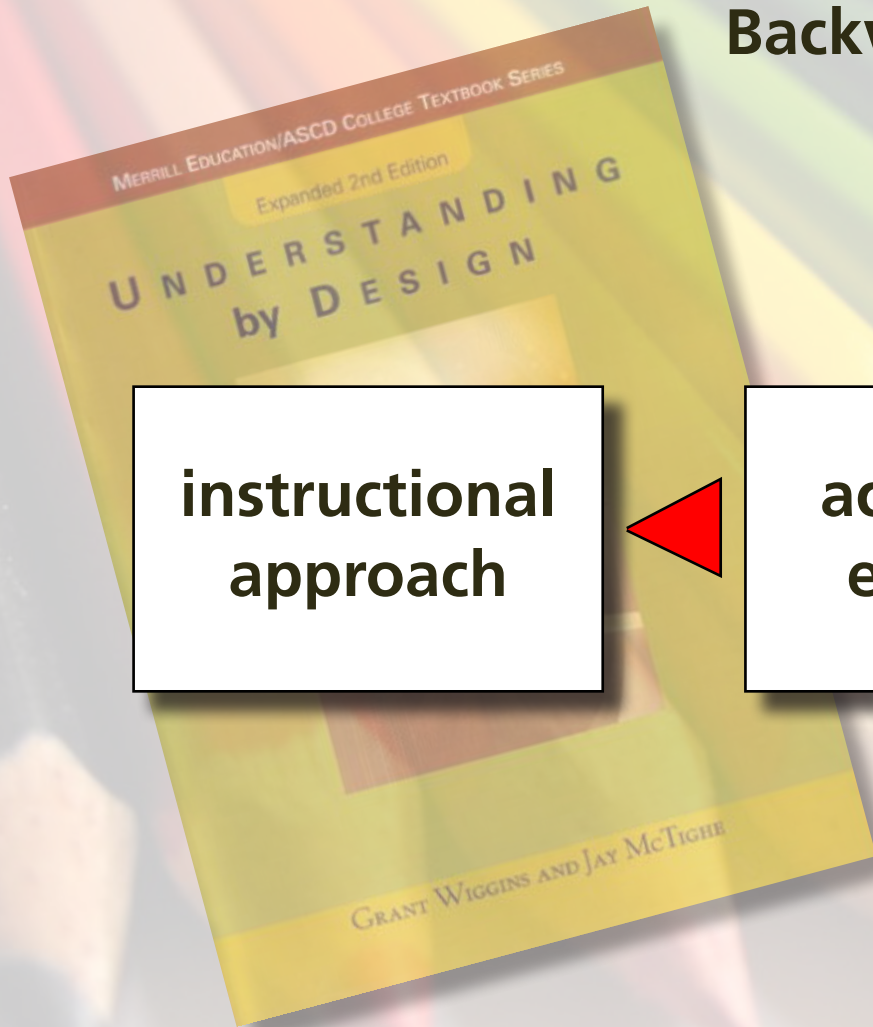
desired
outcomes

1 purposes

2 problems

3 improvements

Backward design



**instructional
approach**

**acceptable
evidence**

**desired
outcomes**

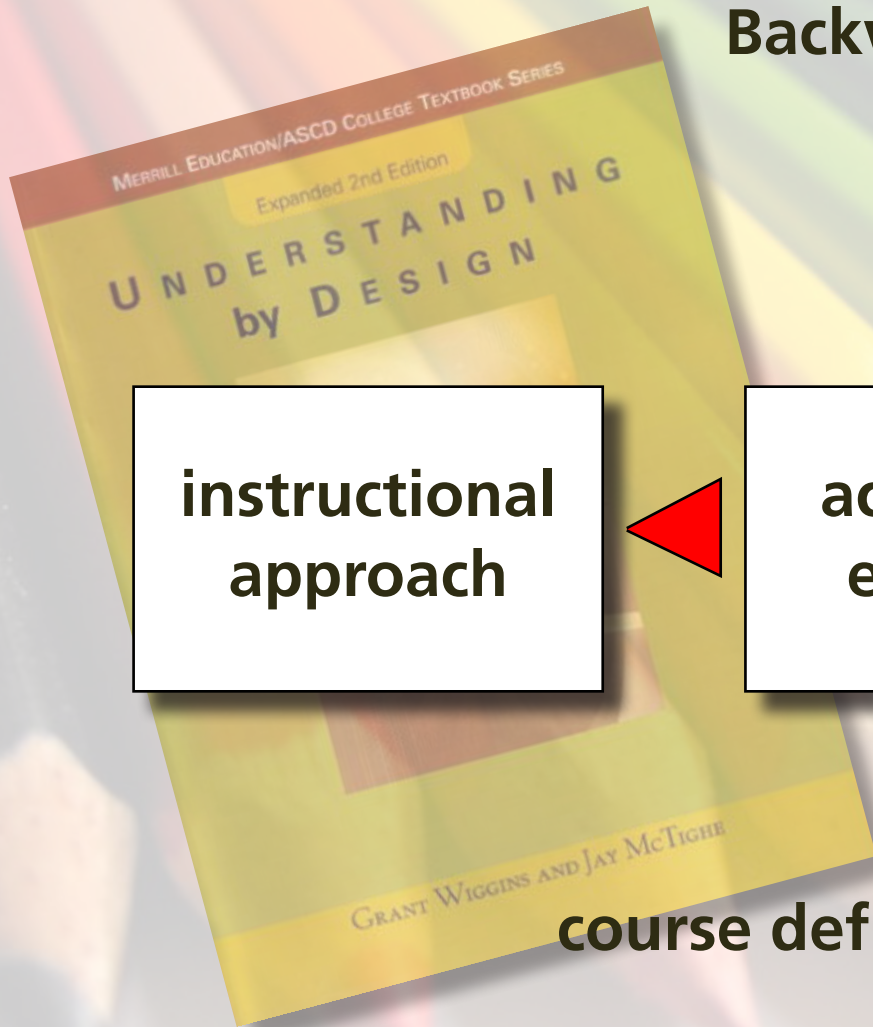


1 purposes

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

1 purposes

2 problems

3 improvements

peer- and self-assessment

1 purposes

2 problems

3 improvements

Calibrated Peer Review

Step 1: assignment & rubric

cpr.molsci.ucla.edu

- 1 purposes
- 2 problems
- 3 improvements

Calibrated Peer Review

(Also) Make a list of conservation concepts that are the three important concepts that...

... Makes me ... in humanity

Rubric for Calibrated Peer Review

Structure

Title

Opening

Paragraph length

Organization

Closing

Content/Ideas

Scientific facts

Sources/evidence

Creativity

Audience awareness

WRITING RUBRIC

1 = needs improvement
does not meet expectations entirely

2 = satisfactory
meets expectations
(what you should aim for)

3 = admirable
exceeds expectations
(rarely selected)

Basic title

Wordy, long, unimaginative, or inappropriate title

Missing a "hook" or a lead in the first paragraphs AND does not orient reader to subject

Many paragraphs are long (6 or more sentences)

Lacks organization, no logical headings, no transitions between paragraphs

Does not end compellingly or with an important idea AND does not tie back to opening

Contains incorrect, misstated, irrelevant, or unnecessary facts

Does not back up facts with proper, convincing, or interesting sources or evidence

Mostly predictable based on available material

Material inappropriate OR not aimed at target audience; Contains unexplained scientific jargon, colloquialisms, or acronyms

Hook or lead present OR first few paragraphs orient reader to subject

Some paragraphs are long (6 or more sentences), most are short (1-5 sentences)

A few headings OR most paragraphs linked by transitions

Summary-like closing, but does not tie back to title or opening hook

All facts are 100% correct, relevant, and necessary

Most, but not all, facts backed up with proper, convincing, or interesting sources or evidence

Some originality apparent

Material appropriate and aimed at target audience AND mostly avoids scientific jargon, contains no colloquialisms or acronyms, and mostly uses clearly defined scientific terms

Catchy title drawing audience into article

Compelling audience appropriate hook or lead present AND first few paragraphs orient lay reader to subject

All paragraphs are short (1-5 sentences)

Headings structure paper in organized, logical way AND paragraphs linked by transitions

Ends compellingly with an important idea or though provoking question AND ties back to title and opening hook

Includes fact-checked expert and/or lay testimony (newspaper article only)

Original presentation of material; uses the unexpected to capture attention

Material appropriate and aimed at target audience AND relates to practical/everyday concerns AND uses analogies or other techniques to relate unfamiliar content to familiar concepts; no jargon, colloquialisms, or acronyms

1 purposes

2 problems

3 improvements

Calibrated Peer Review

Step 2: upload

Step 3: review

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1 purposes

2 problems

3 improvements

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UPLOAD

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- 2 problems
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CALIBRATION

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CALIBRATION

MEDIUM

HIGH

LOW

The New York Times

January 20, 2009

OBSERVATORY

Spectacular Supernova Observed

By John Glenn

New York, N.Y. – People around the world witnessed the most brilliant supernova in recorded history this morning. The supernova, named SN 2009B, appeared in the constellation of Cassiopeia on the Eastern Time, appearing as bright as the full moon. At its peak, it continued to shine for several hours.

Traffic was interrupted in New York City, as early-rising commuters had to look up at the amazing sight. As of press time, the event was being covered from the Association of Professional Journalists.

Galileo

20 January 2008

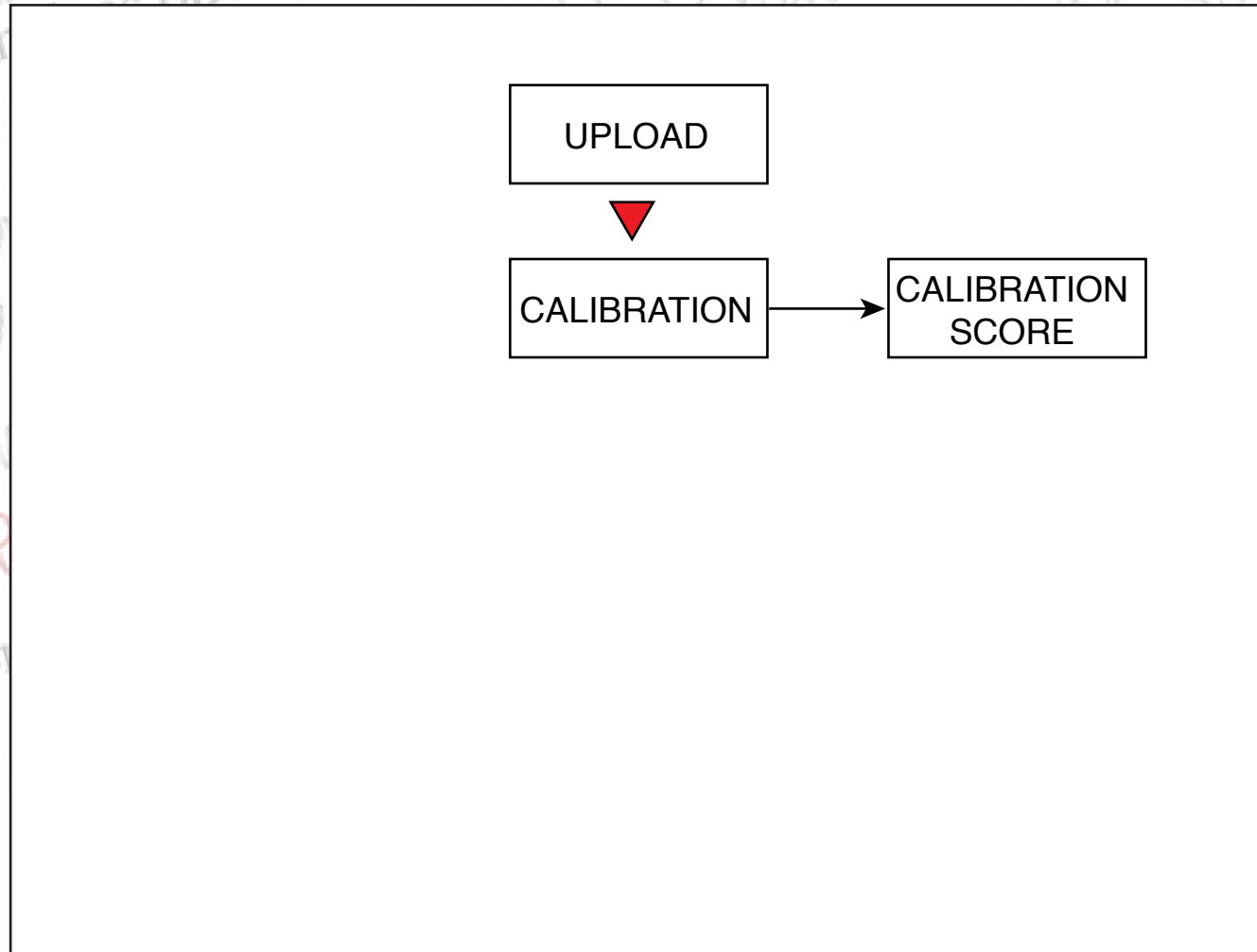
Yesterday at about 4 p.m., I observed a peculiar object appear in the sky. A glowing flash emitted a few seconds, accompanied its appearance. The object was visible even in broad daylight. How did this unprecedented event affect the consequences for Earth? In order to understand the consequences for Earth, we have to look at the galaxy. To fully appreciate it and not be alarmed, we must understand the life cycle of stars and how they are classified as consisting of eight planets (Pluto, etc.). Various

1 purposes

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3 improvements

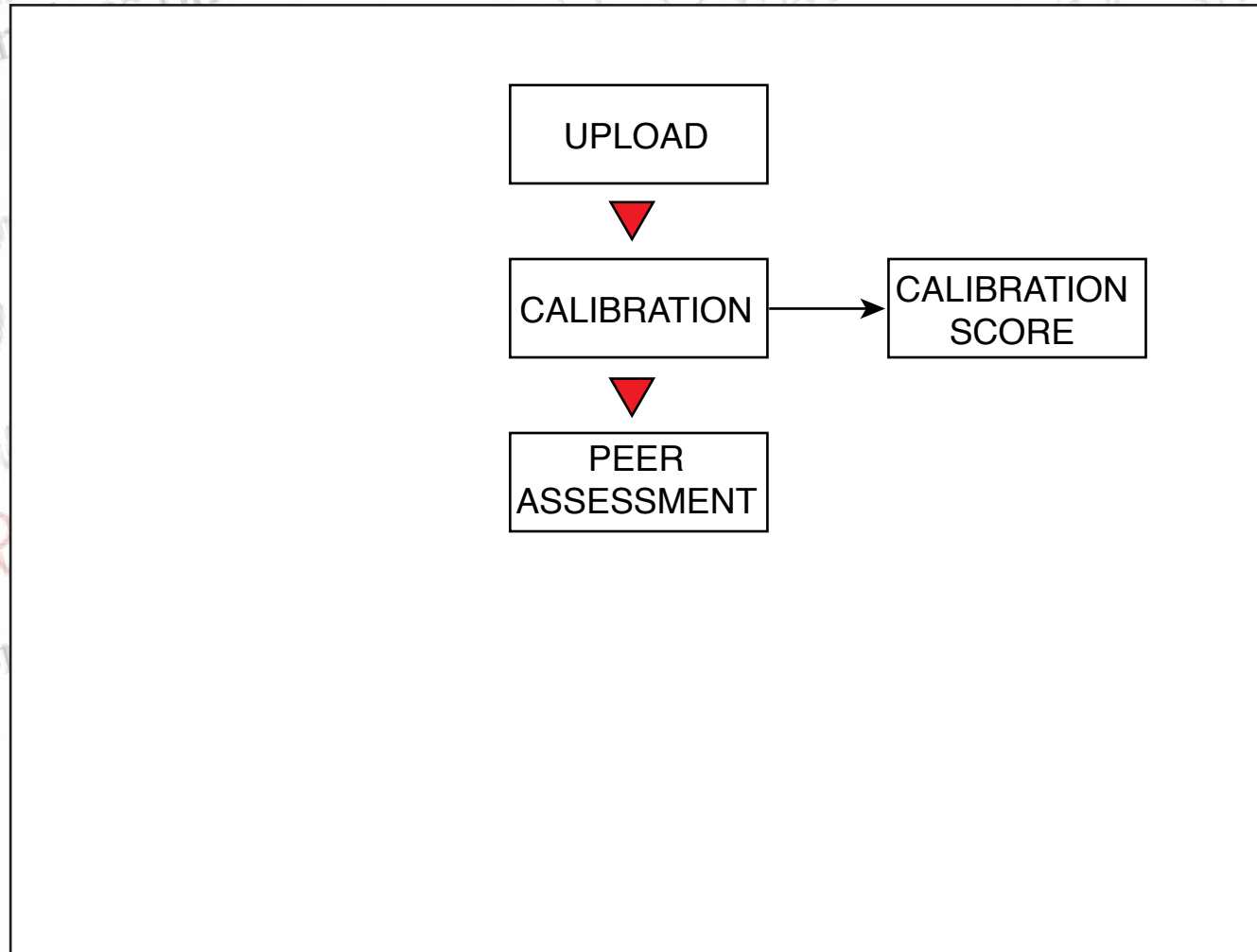
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- 3 improvements

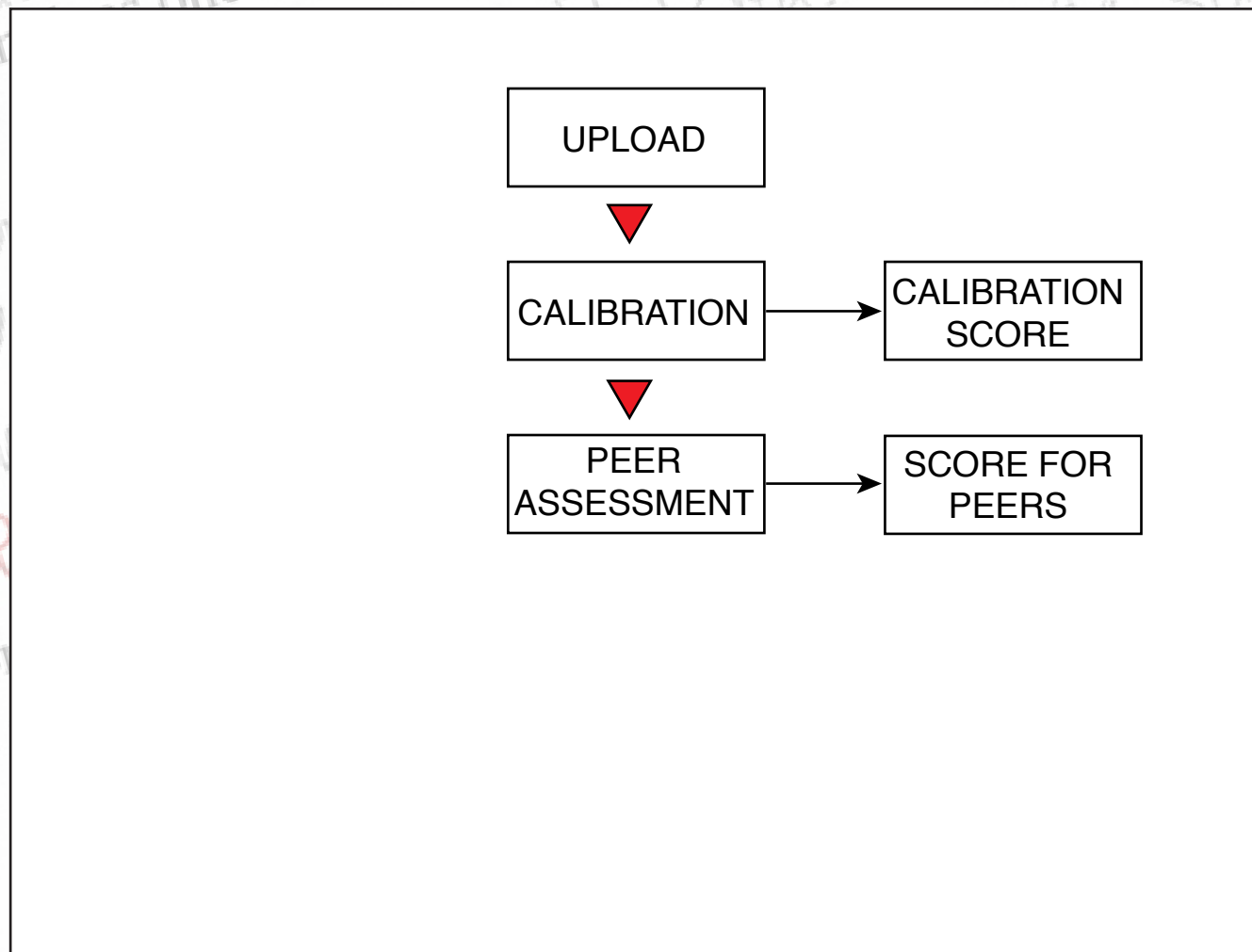
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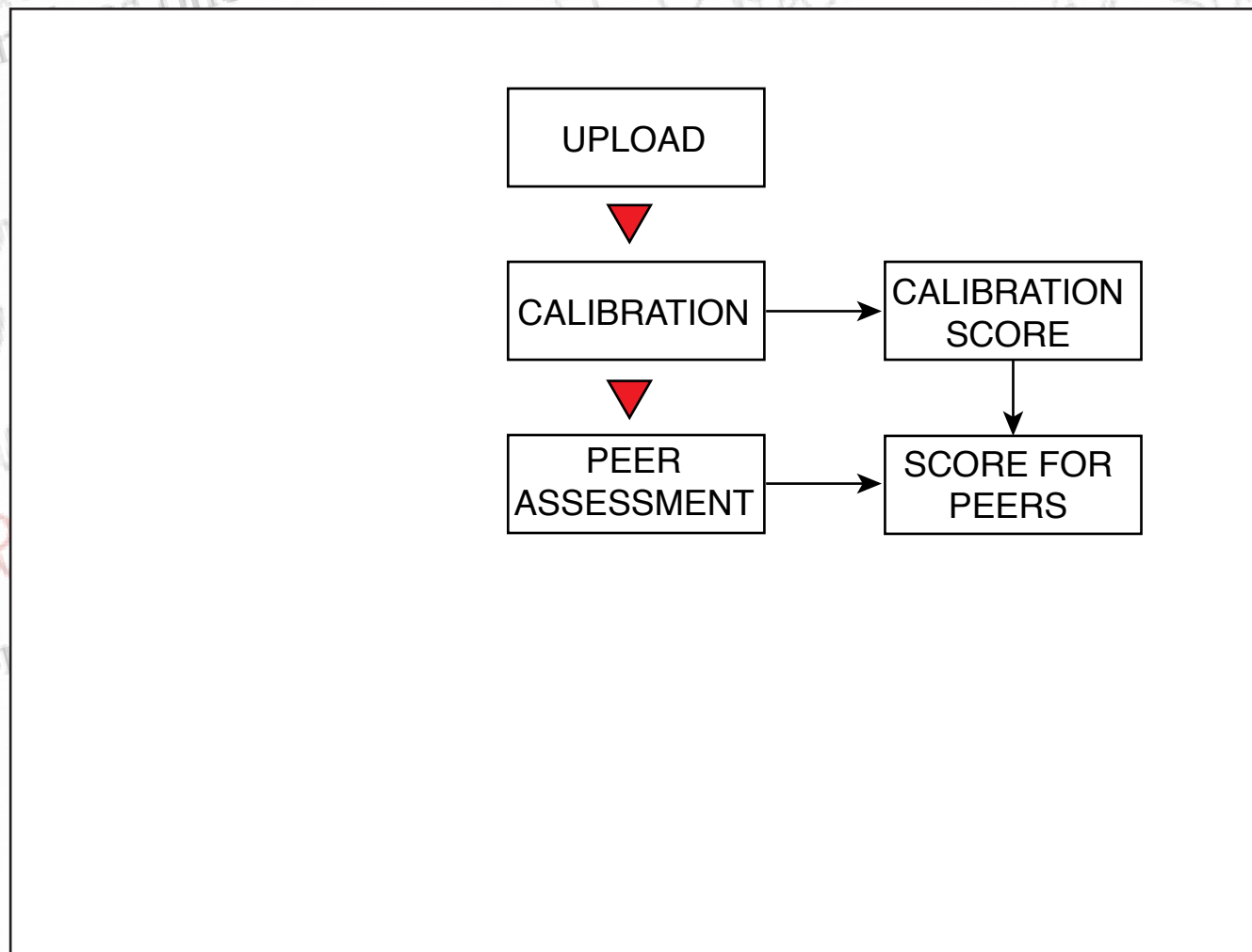
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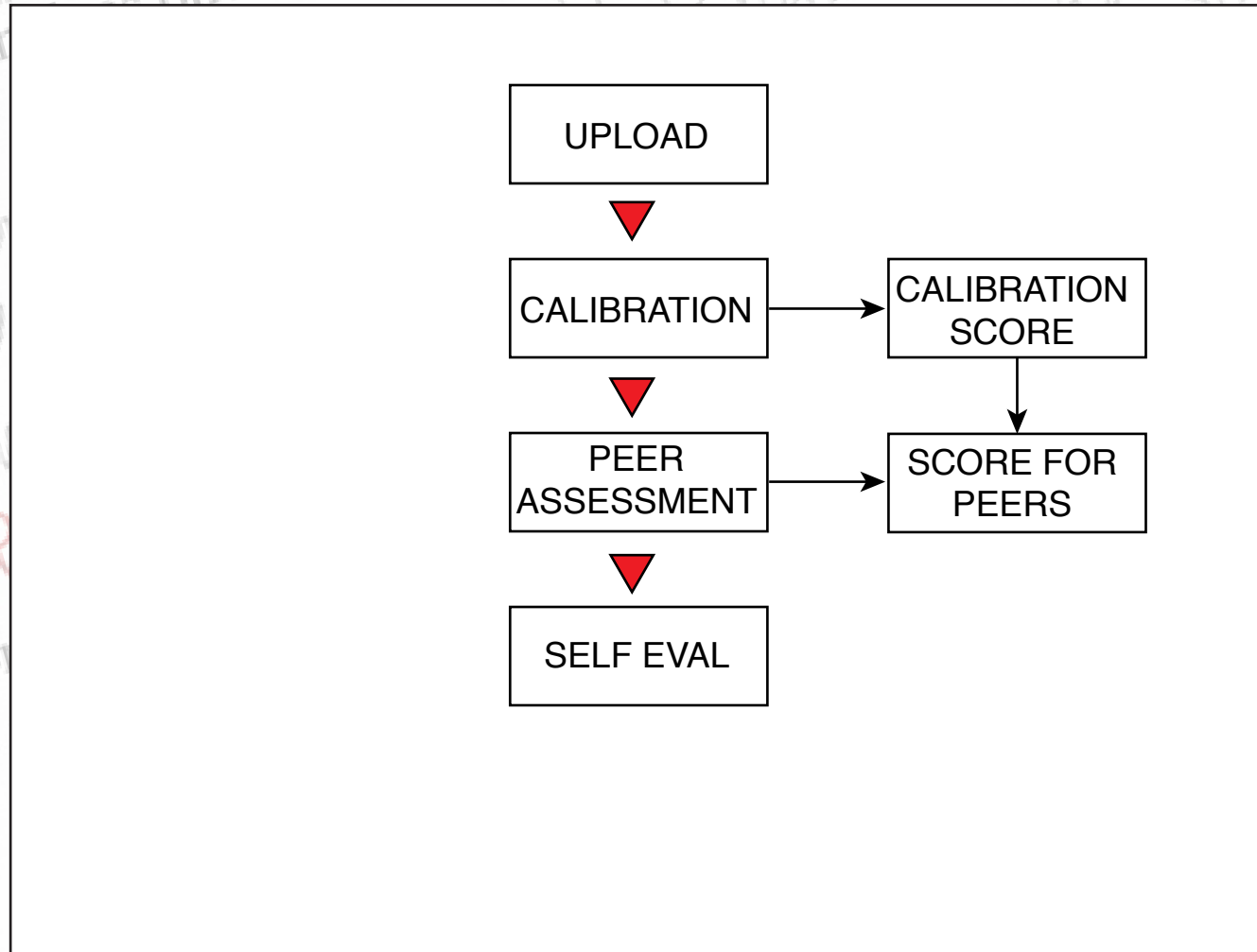
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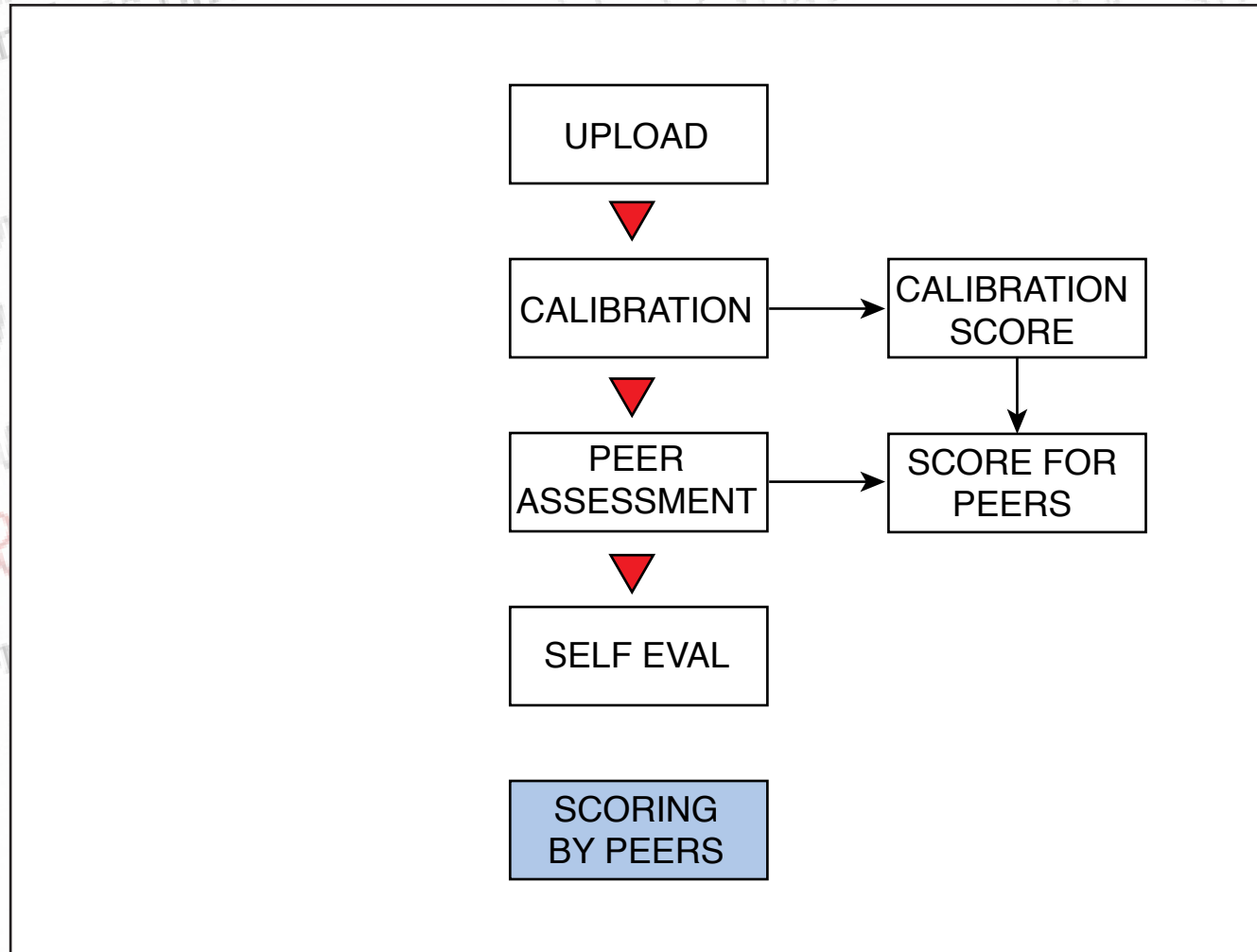
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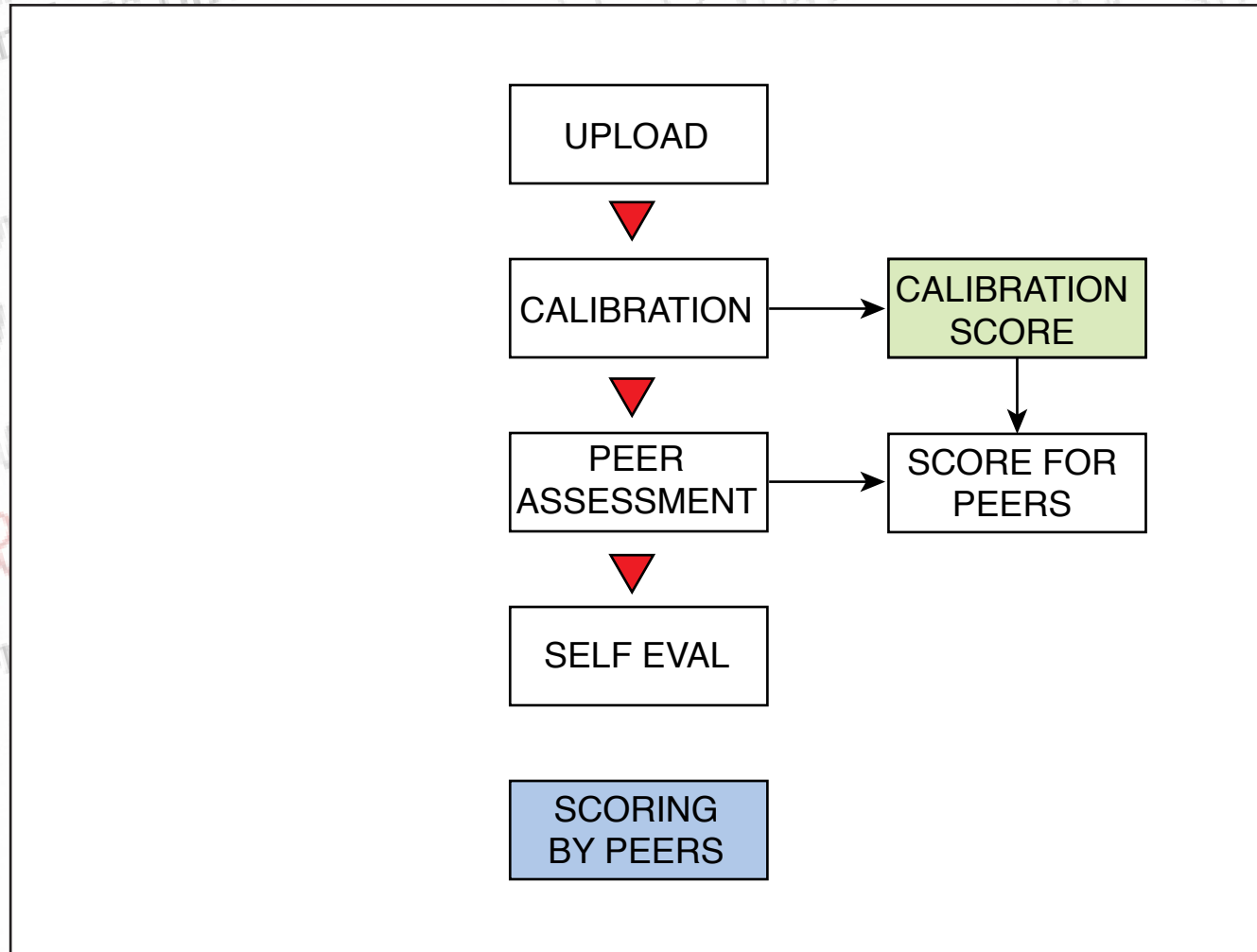
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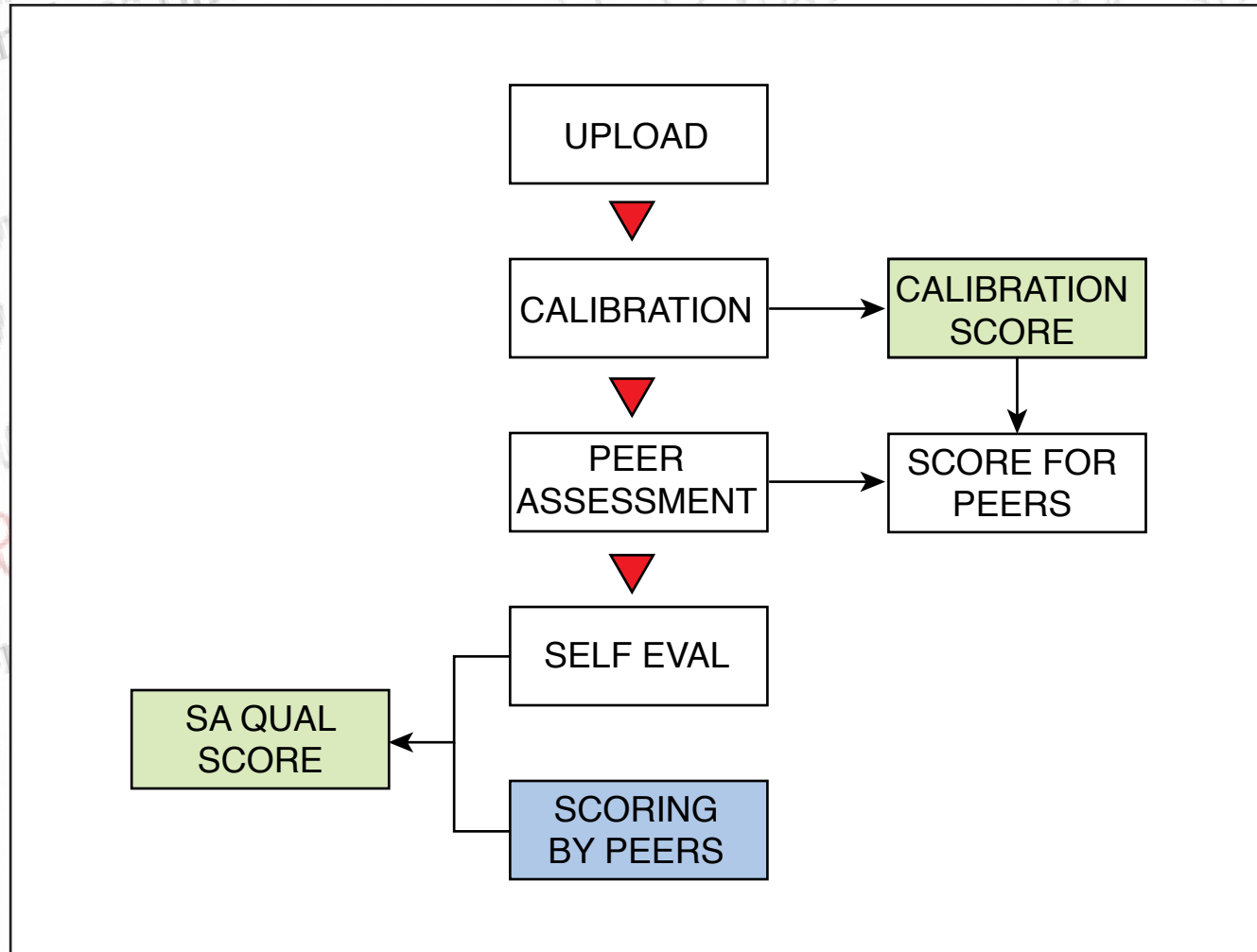
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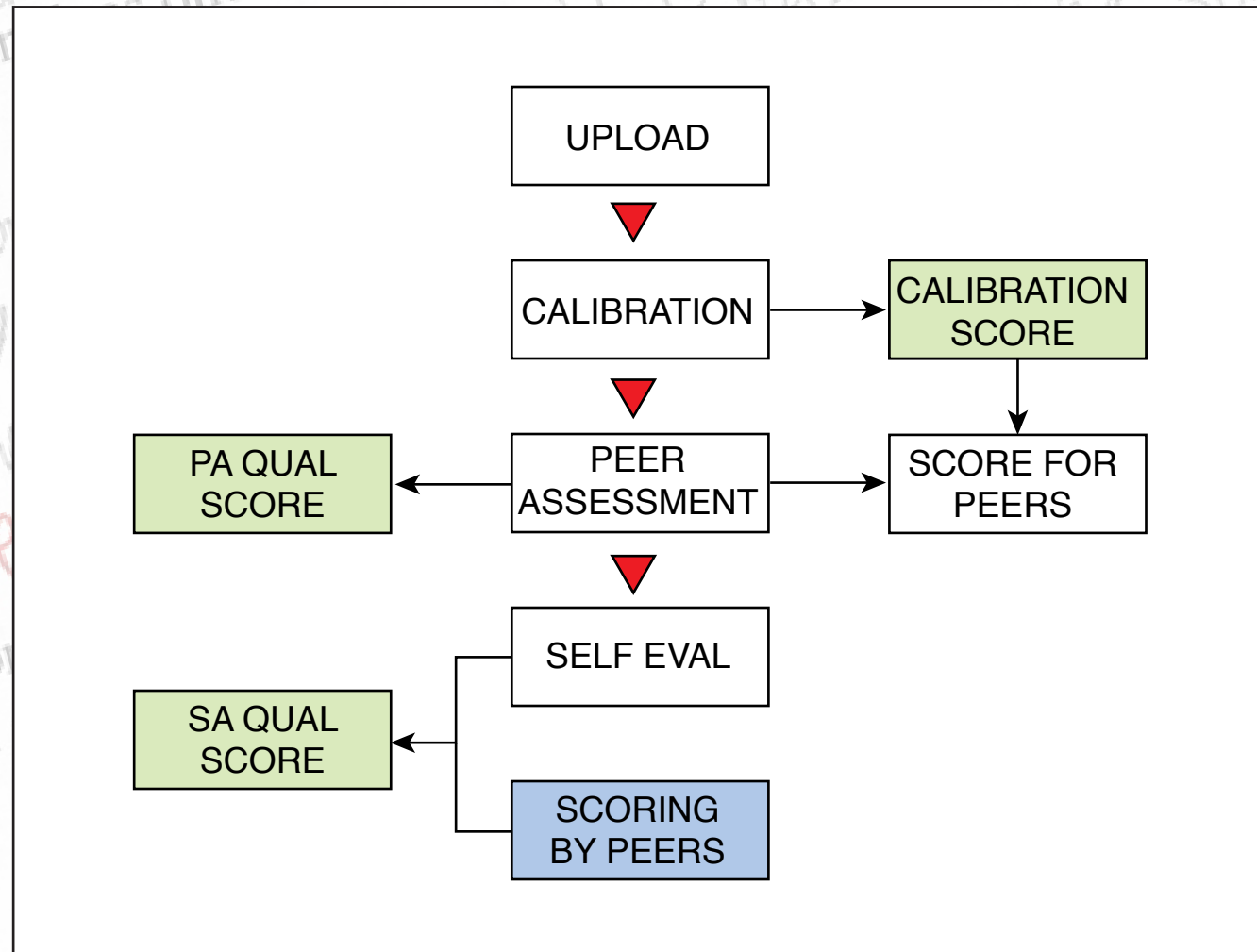
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A large, empty classroom with rows of desks and chairs. The room has a light blue floor with yellow and red lines. The walls are light-colored wood paneling. The text "rethink assessment" is overlaid in the center in a large, bold, black font with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

**rethink
assessment**



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