

# Assessment: The silent killer of learning



Universiteit Groningen  
Groningen, Netherlands, 26 November 2015



# Assessment: The silent killer of learning



Universiteit Groningen  
Groningen, Netherlands, 26 November 2015



**kosten**

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

455

**krank**

1. die Krankheit, —, —en

**COW**

377

**magnificent**  
**glor**

1. magnificent
2. master

430

**das Kind, —(e)s, —er**

1. kindisch
2. kindlich

**der Kellner, —s, —**

1. der Keller, —s, —

**kennen**

kannte-gekant

*irreg.*

1. kennen-lernen
2. erkennen
3. bekant
4. d

428

think



kosten

1. die Kosten

2. ...

accel.

poco rit.

think

428

kennen

kannte-gekant

1. kennen

2. erkennen

3. bekant

4. d...

Verizon 3G 4:20 PM  
Flashcard

Back

23 of 100

pedantic

adj. ostentatious in one's learning

23 of 100

Verizon 3G 4:20 PM

Search



Popular



Subjects



Grade Levels



Standardized

Home

My Decks

Review

More

**35 % retained  
after 1 week**

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

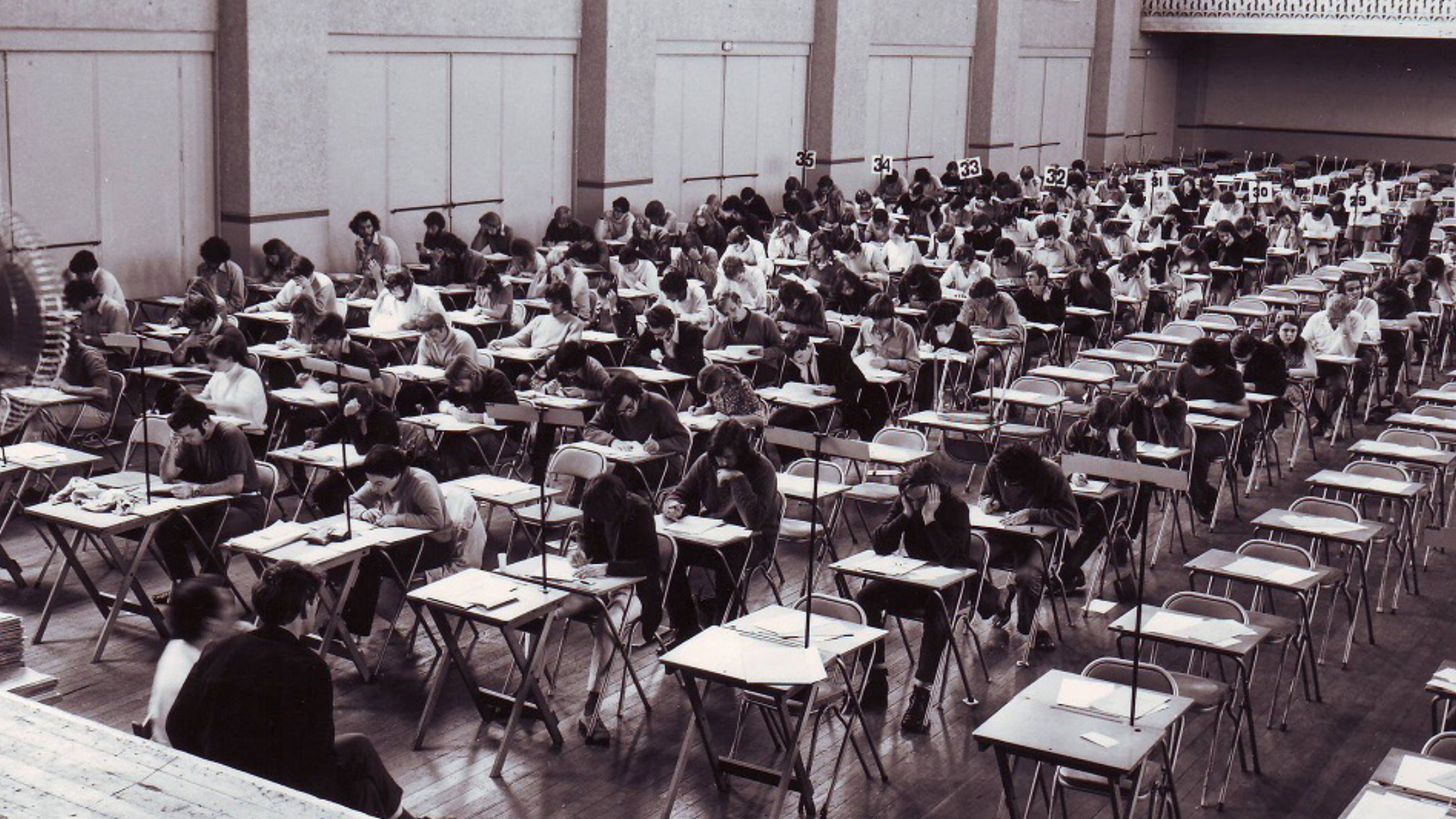












A large, dimly lit classroom filled with students sitting at desks, appearing to be in a test or lecture setting. The students are mostly seen from behind, looking towards the front of the room. The desks are arranged in rows, and the room has a high ceiling with large windows or doors in the background. The overall atmosphere is one of a formal, structured educational environment.

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



1 purposes



1 purposes

2 problems



1 purposes

2 problems

3 improvements



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

**2** problems



## inauthentic tests

**1** purposes

**2** problems

**what is the meaning/definition of...?**

**1** purposes

**2** problems



**inauthentic problem solving**

**1** purposes

**2** problems

**problem**

**1** purposes

**2** problems

**problem**

**outcome**

**EDUCACION**

**1** purposes

**2** problems



problem

outcome

**KNOWN**

**1** purposes

**2** problems

problem

solution

outcome

**KNOWN**

1 purposes

2 problems

problem

solution

outcome

UNKNOWNN

KNOWNN

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

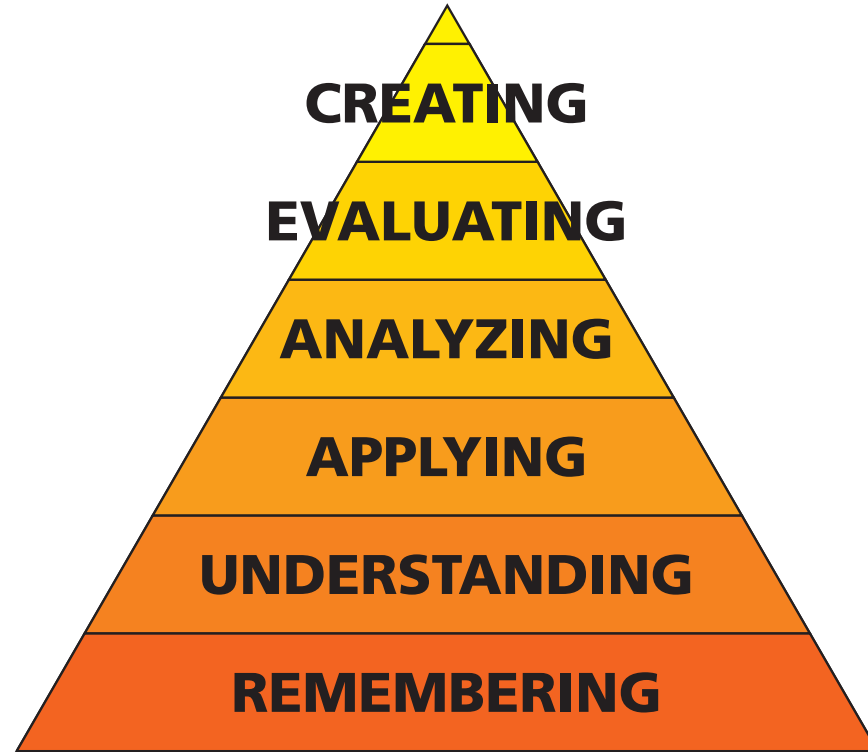
KNOWN

UNKNOWN

1 purposes

2 problems

# Thinking skills



prob

prob

WIN

DOWN

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.**



**On a Saturday afternoon, you pull into a parking lot with un-metered 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 un-metered 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 un-metered 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.**

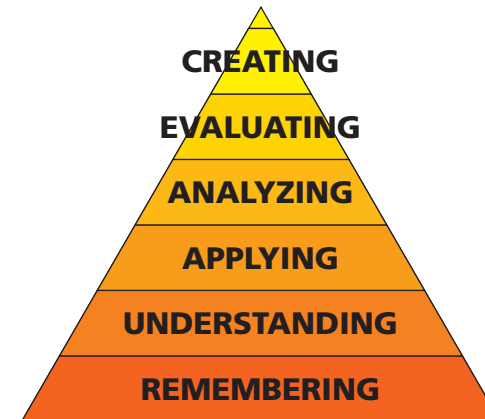
**How long do you have to wait before someone frees up a space?**

**Requires:**

**Assumptions**

**Developing a model**

**Applying that model**



On a Saturday afternoon, you pull into a parking lot with un-metered 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.**

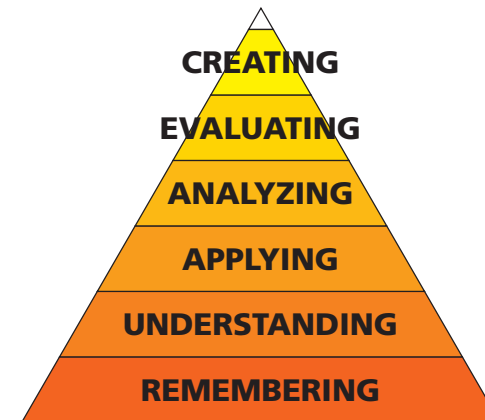
How long do you have to wait before someone frees up a space?

**Requires:**

Assumptions

**Developing a model**

**Applying that model**



On a Saturday afternoon, you pull into a parking lot with un-metered 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.

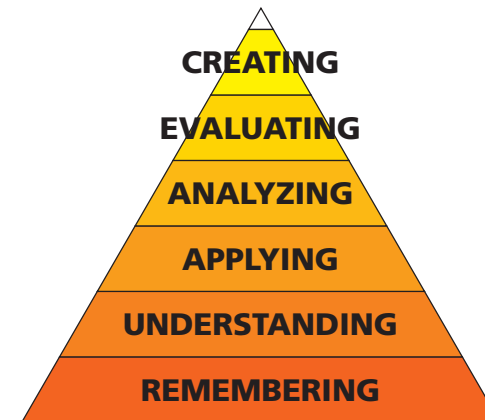
**Assuming people leave at regularly-spaced intervals, how long do you have to wait before someone frees up a space?**

**Requires:**

Assumptions

Developing a model

Applying that model



On a Saturday afternoon, you pull into a parking lot with un-metered 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.

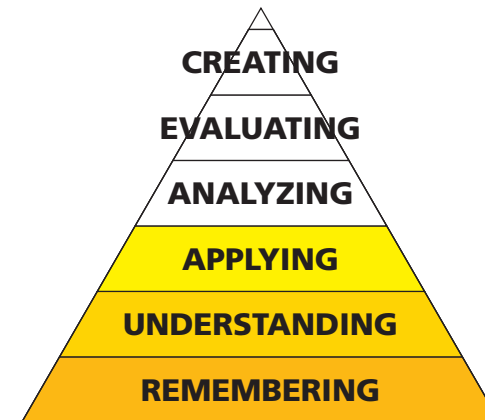
**Assuming people leave at regularly-spaced intervals, how long do you have to wait before someone frees up a space?**

**Requires:**

Assumptions

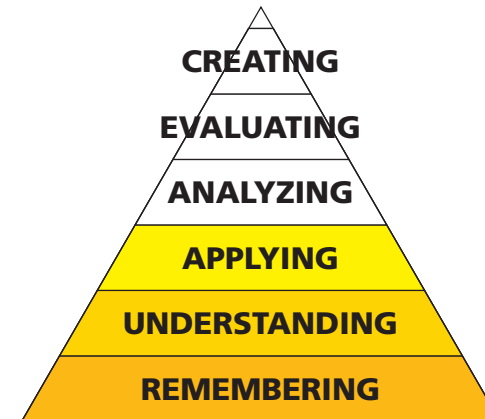
Developing a model

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.**

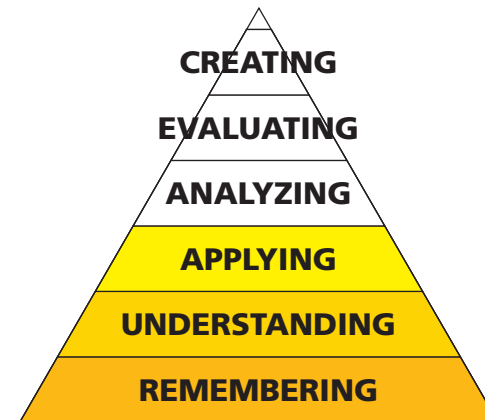
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On a Saturday afternoon, you pull into a parking lot with unmetered spaces near a shopping area, where people are known to shop, on average, for 2 hours. You circle around, but there are no empty spots. You decide to wait at one end of the lot, where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

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

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

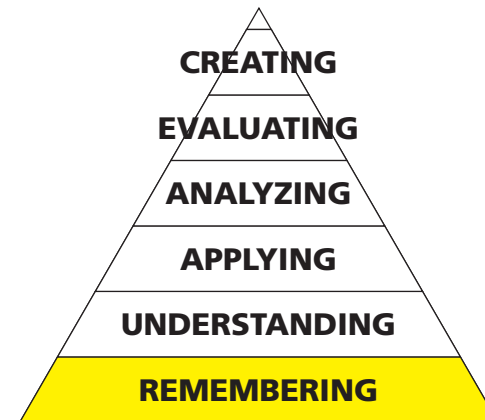




On a Saturday afternoon, you pull into a parking lot with unmetered spaces near a shopping area, where people are known to shop, on average, for 2 hours. You circle around, but there are no empty spots. You decide to wait at one end of the lot, where you can see (and command) about 20 spaces.

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

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



pro

computers  
can do this!

outcome

problem

procedure

answer

KNOWN

KNOWN

KNOWN

UNKNOWN

1 purposes

2 problems



**1** purposes

**2** problems



**1** purposes

**2** problems

problem

solution

outcome

UNKNOWN

KNOWN

problem

problem solving

KNOW

REAL

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:

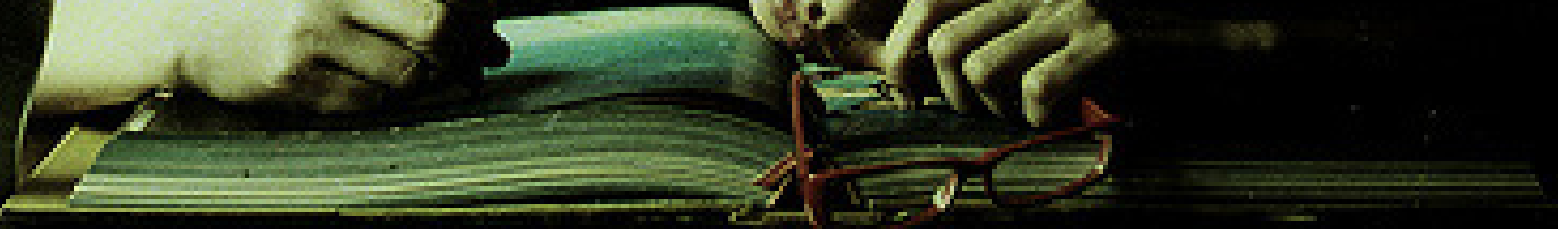
$$0 \leq \rho \leq 4, \quad 0 \leq \theta \leq 2\pi, \quad \frac{\pi}{2} \leq \phi \leq \pi$$

integral is thus:

$$= \left\{ \int_{\rho=0}^4 \rho^3 d\rho \right\} \left\{ \int_{\theta=0}^{2\pi} d\theta \right\} \left\{ \frac{1}{2} \int_{\phi=0}^{\pi} \sin(2\phi) d\phi \right\} = \boxed{0}$$

**Final Exam**

# high-stakes examinations promote cramming



**1** purposes

**2** problems

A person with dark hair is sleeping at a desk. They are holding a pen over an open book. A white mug is on the desk to the left. A clock is visible in the bottom left corner. 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

Law Model

Mass makes me  
happy in humanity

Describe the Law of conservation of mass: Sometimes called the Law, states that mass of a closed system will remain constant, regardless of the process. Also, matter cannot be created nor destroyed.

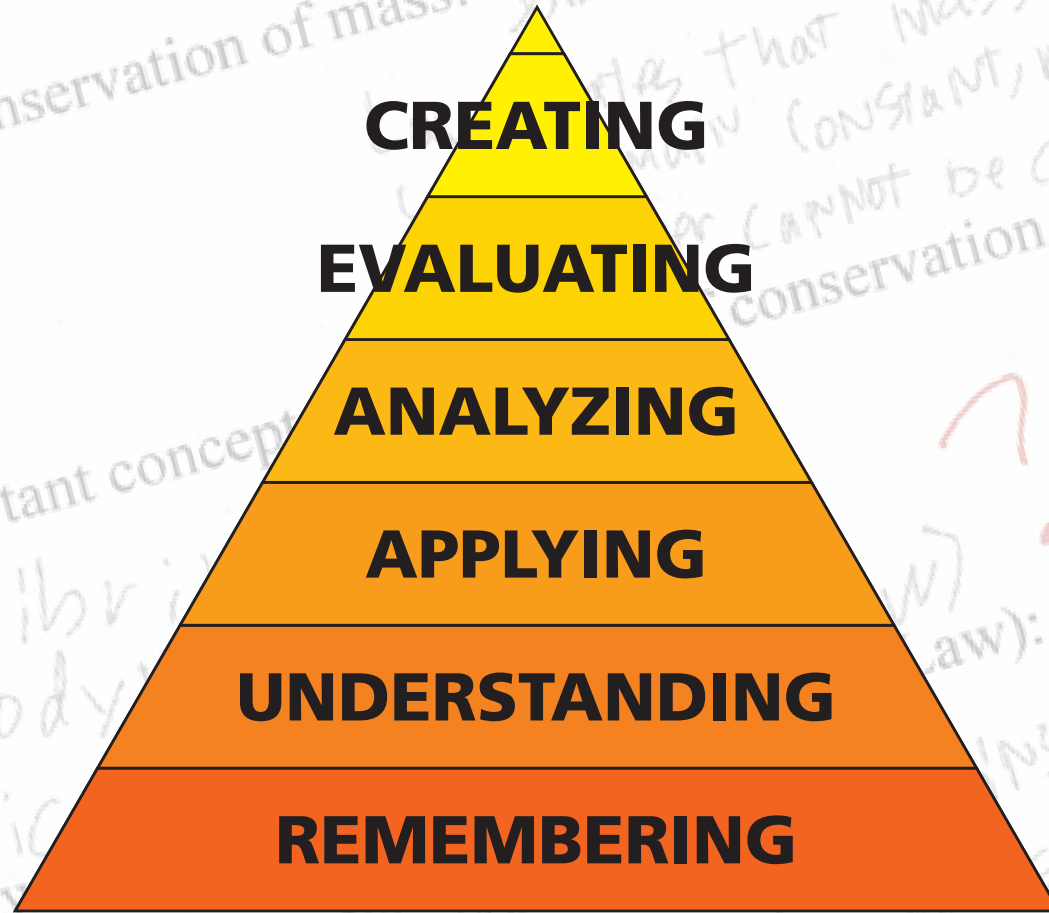
List the three important concepts that the Law of conservation of Energy leads to:  
Equilibrium (boiling)  
Thermodynamics (boiling)  
Kinetics (how-chicka-wow-wow)

... but ...

Describe the Law of definite composition (Dalton's Law):  
... always contains exactly the same parts by mass.

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



**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

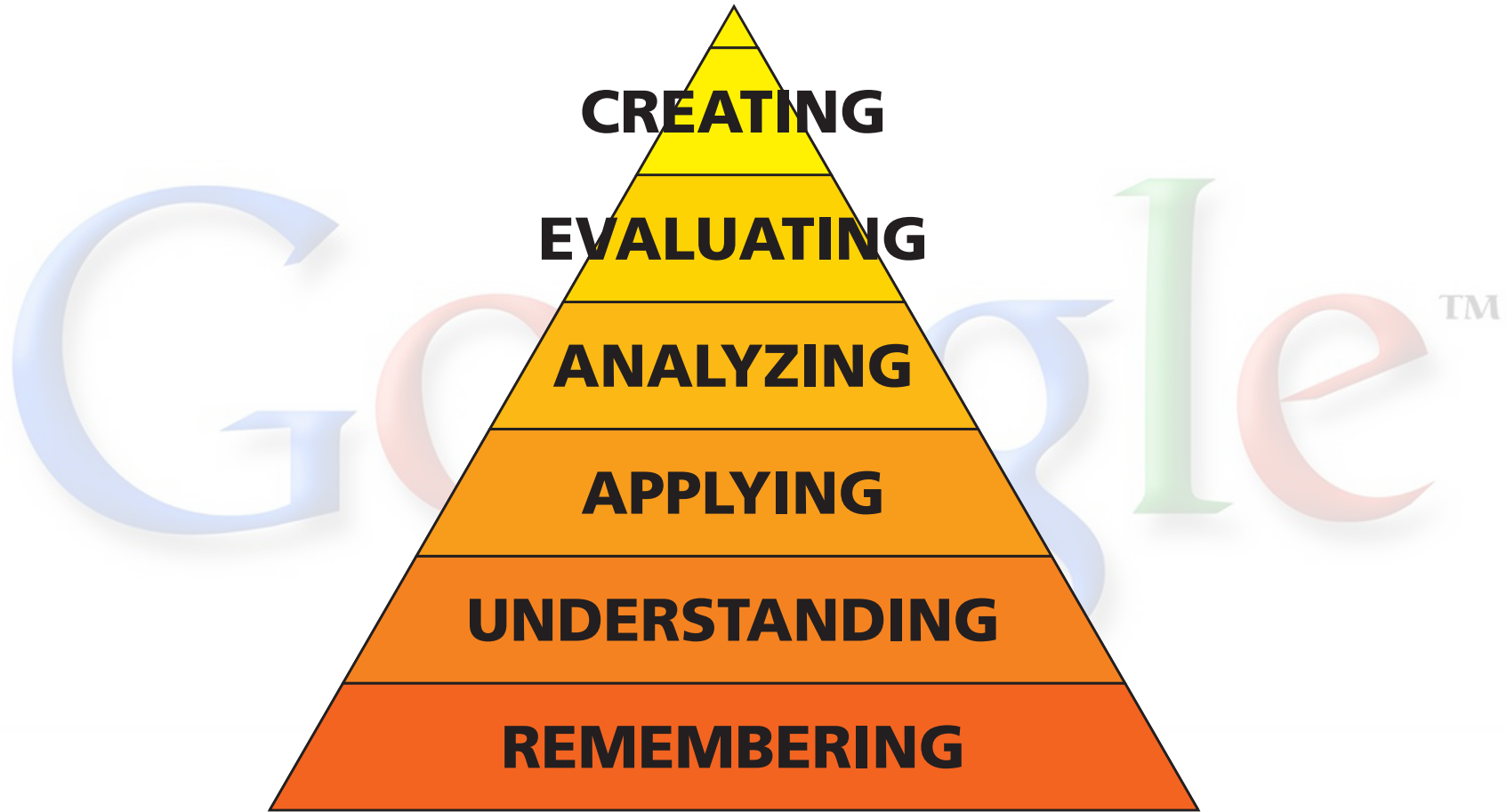


Google™

1 purposes

2 problems

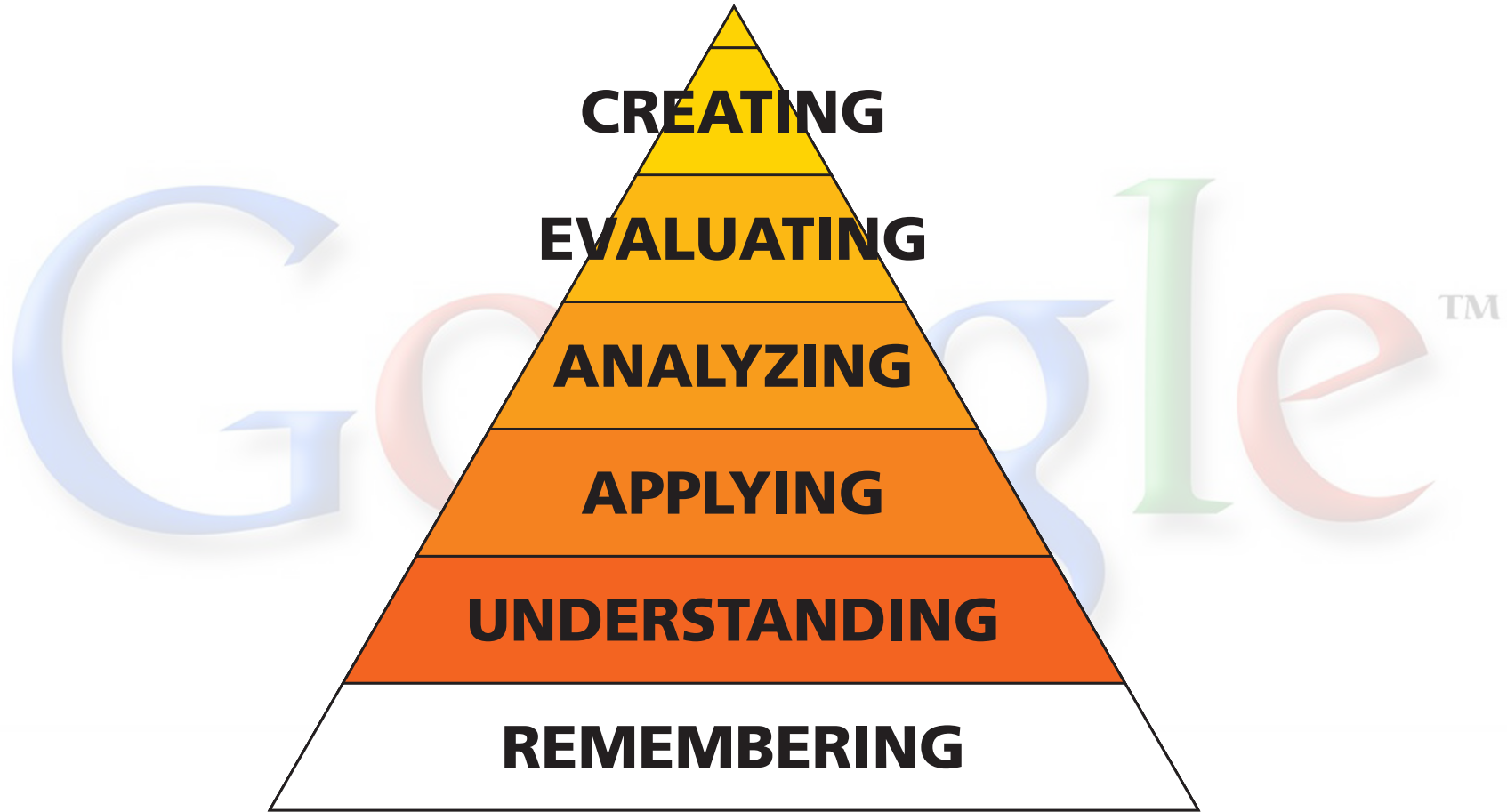
3 improvements



**1** purposes

**2** problems

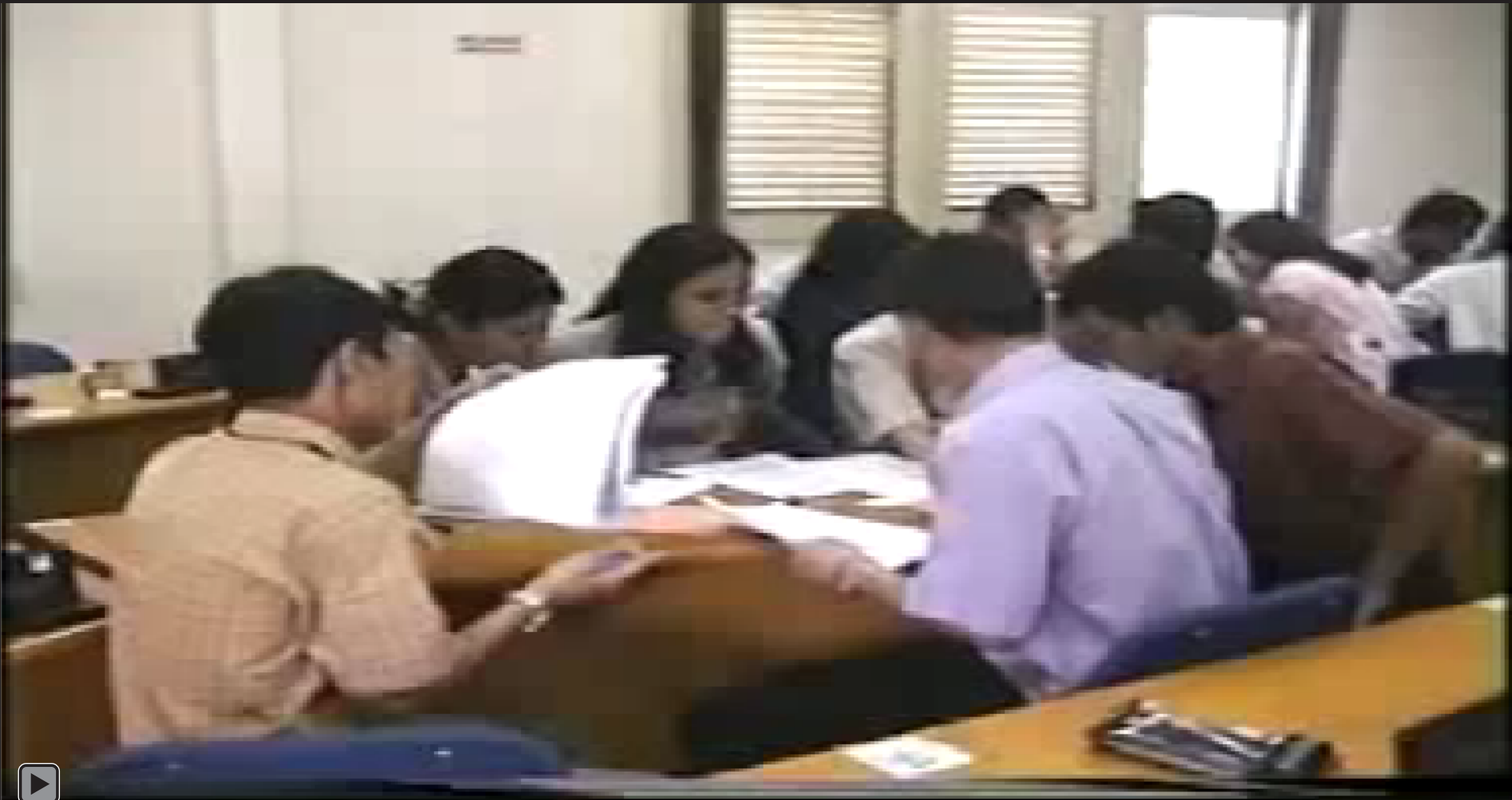
**3** improvements



**1** purposes

**2** problems

**3** improvements



**1** purposes

**2** problems

**3** improvements

# 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 389314

This is the individual round; work on these questions on your own.



Jump to ▼

1

2

3

4

5

### expression question

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

Submit response

Enter an expression, e.g.,  $x^2$  for  $x^2$ ,  $\ln(y) - \sin(x)$  for  $\ln y - \sin x$ ,  $x/(y+1)$  for  $\frac{x}{y+1}$ ,  $(1/2)x$  for  $\frac{1}{2}x$ . Do not enter a complete equation.

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

[Change seat](#)

[Send a message to the instructor](#)

[Join another](#)

1 purposes

2 problems

3 improvements

This is the individual round;

**expression question**

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

Submit response

Enter an expression, e.g.,  $x^2$  for  $x^2$ ,  $\ln(y) - \sin(x)$  for  $\ln y - \sin$

1 purposes

2 problems

3 improvements



This is the individual round;

### expression question

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

Submit response

Enter an expression, e.g.,  $x^2$  for  $x^2$ ,  $\ln(y) - \sin(x)$  for  $\ln y - \sin x$

1 purposes

2 problems

3 improvements

$6x - 6$

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

Enter an expression, e.g.,  $x^2$  for  $x^2$ ,  $\ln(y) - \sin(x)$  for  $\ln y - \sin$

1 purposes

2 problems

3 improvements



**1** purposes

**2** problems

**3** improvements



**2**

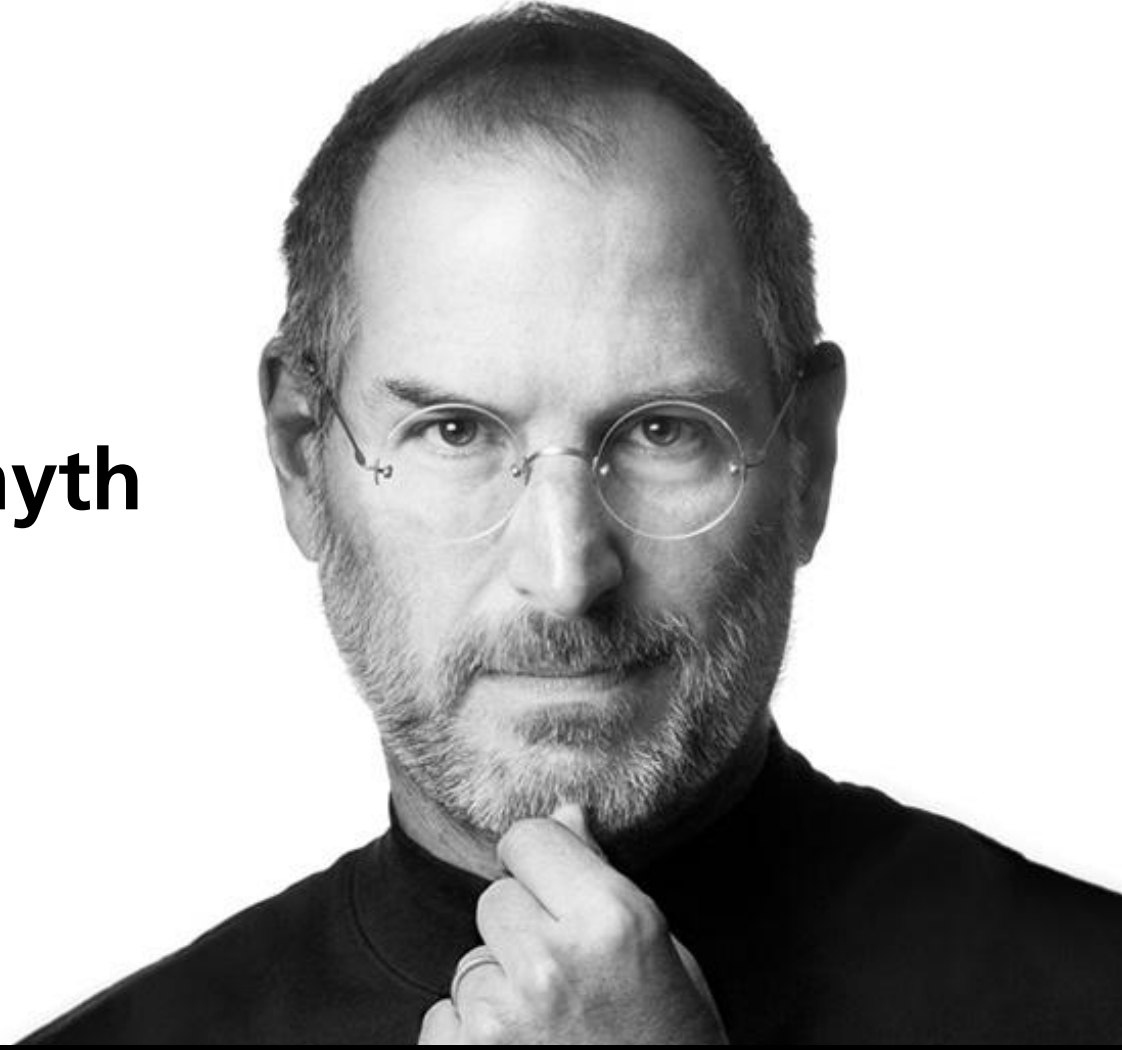
**focus on feedback, not ranking**

**1** purposes

**2** problems

**3** improvements

# objective ranking: a myth

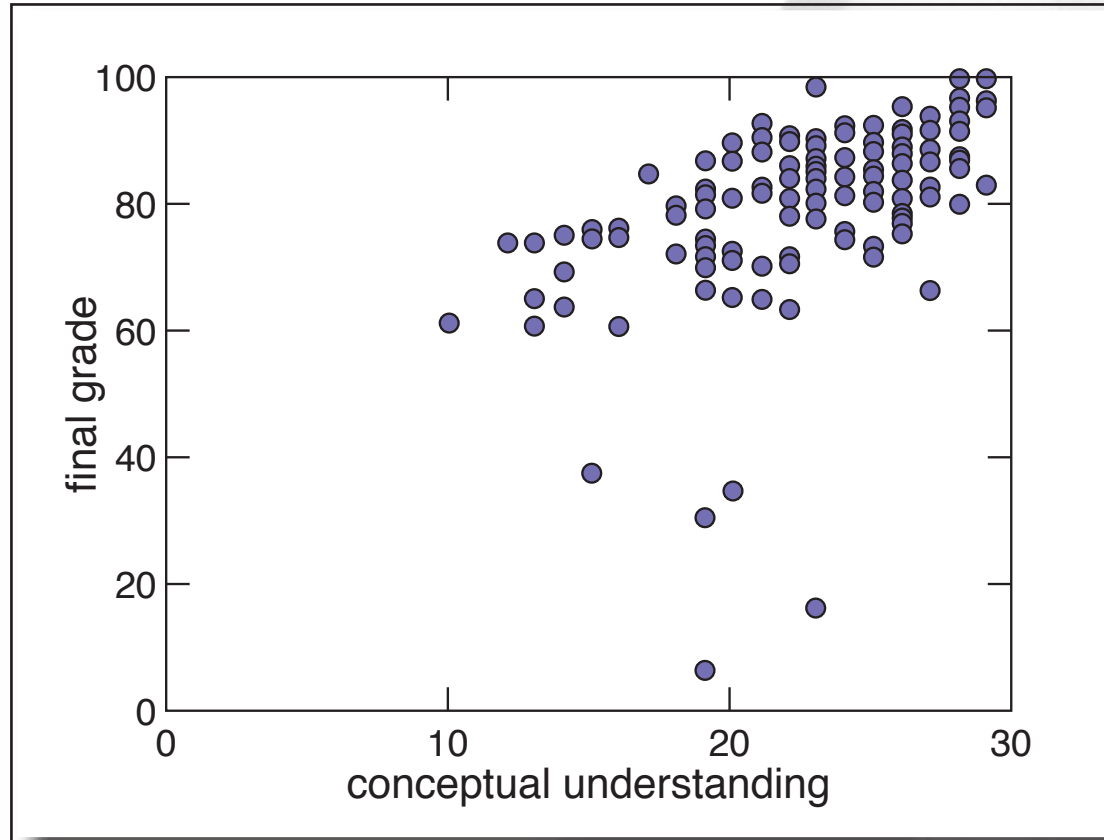


**1** purposes

**2** problems

**3** improvements

# 2 metrics, 2 results

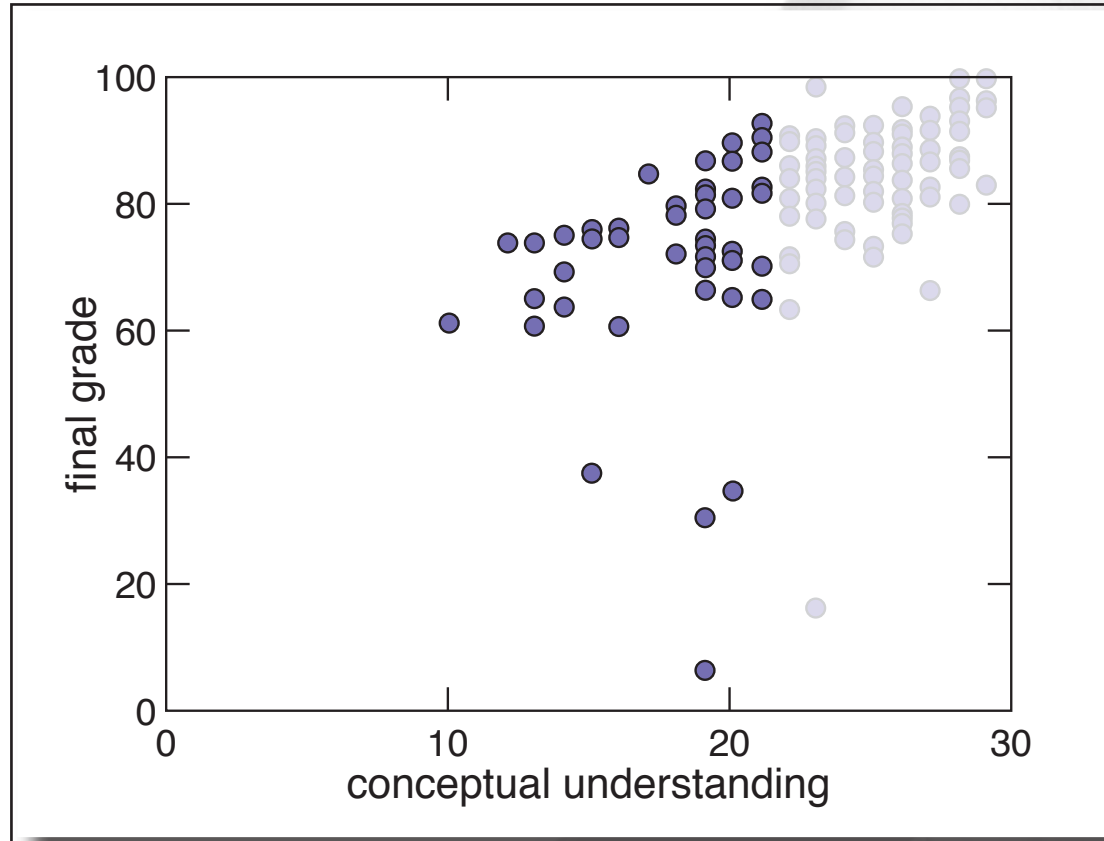


1 purposes

2 problems

3 improvements

# Aristotelian thinkers

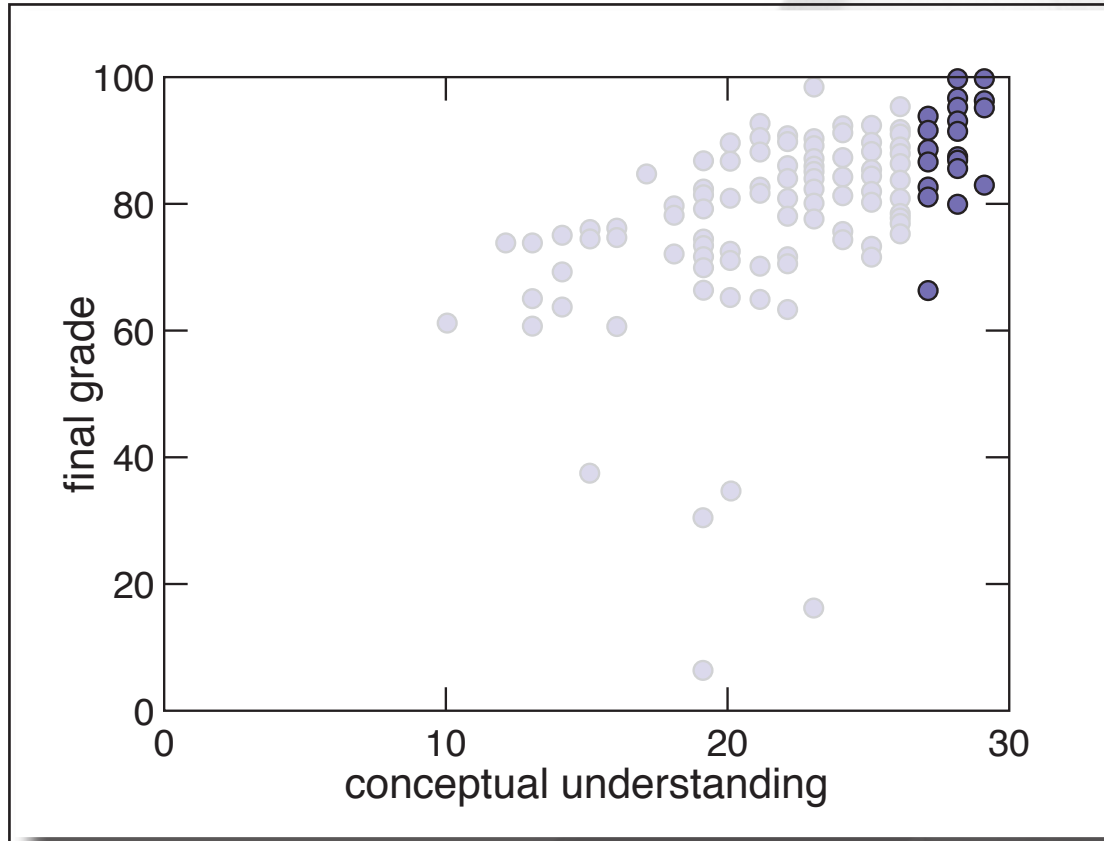


1 purposes

2 problems

3 improvements

# top performers, broad grade distribution



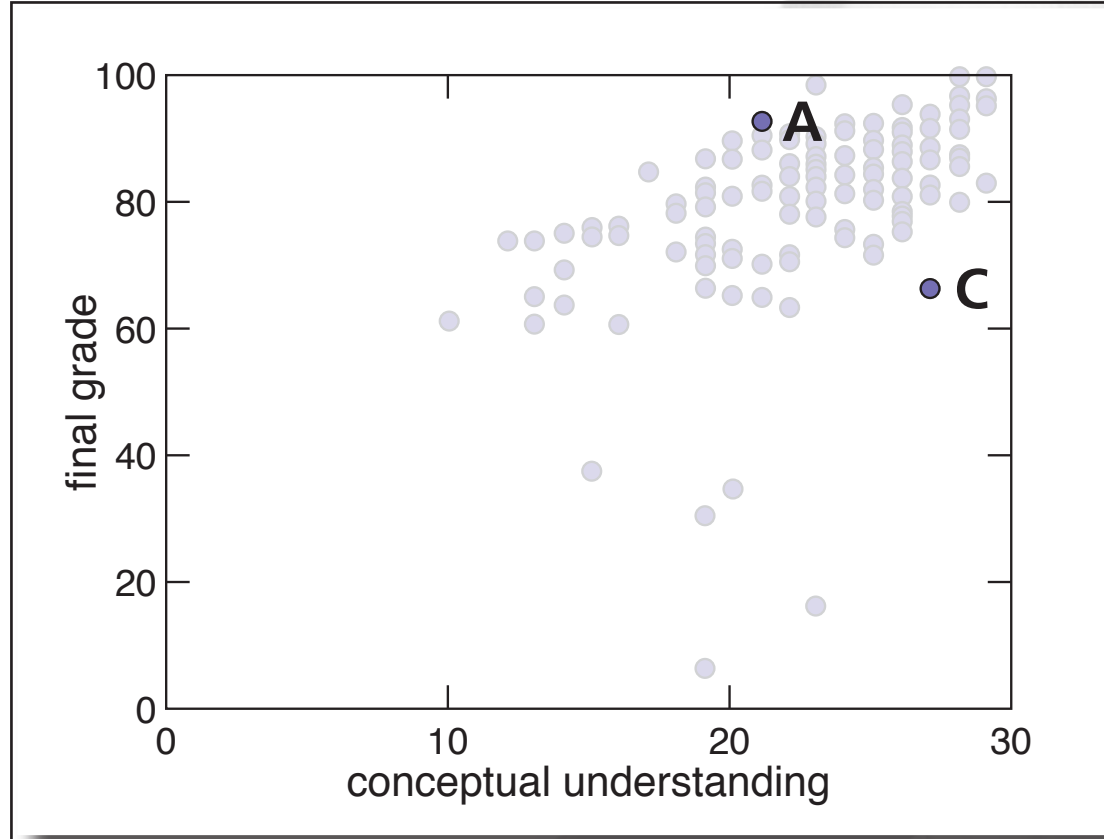
1 purposes

2 problems

3 improvements



# objectivity or injustice?



1 purposes

2 problems

3 improvements



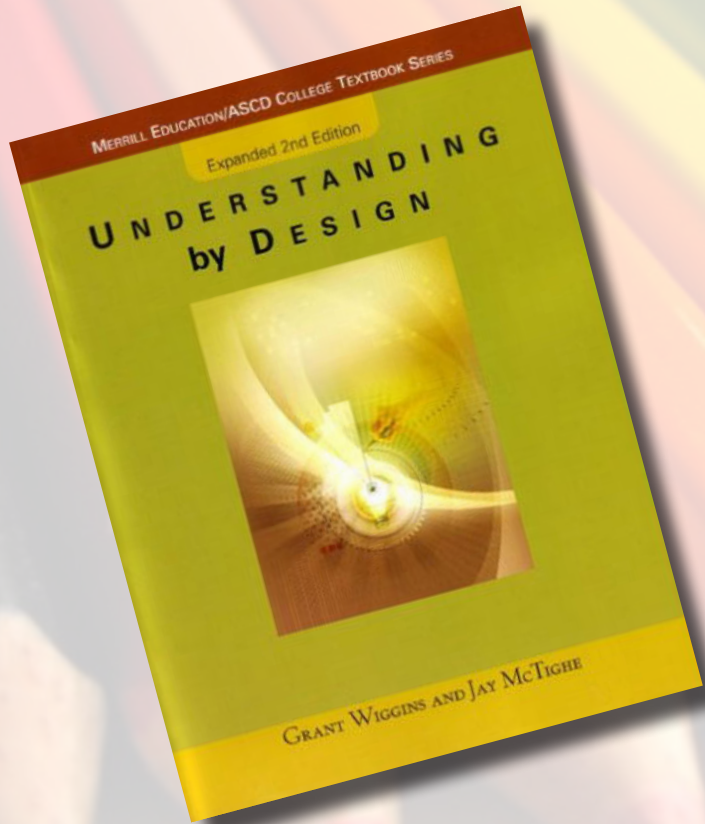
**3**

**focus on skills, not content**

**1** purposes

**2** problems

**3** improvements



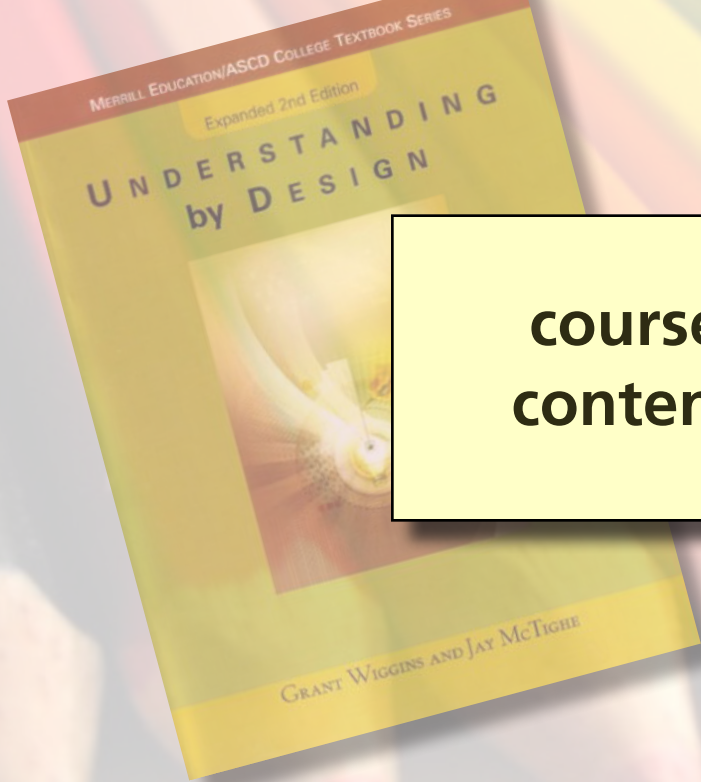
Grant Wiggins and Jay McTighe, *Understanding by Design* (Prentice Hall, 2001)

**1** purposes

**2** problems

**3** improvements

# Traditional approach to course planning



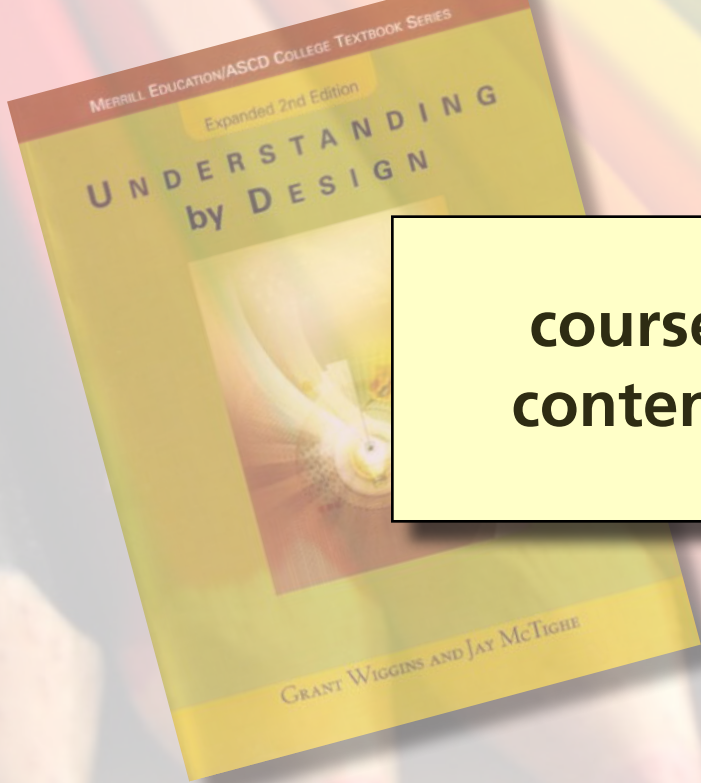
**course  
content**

**1** purposes

**2** problems

**3** improvements

# Traditional approach to course planning



**course  
content**



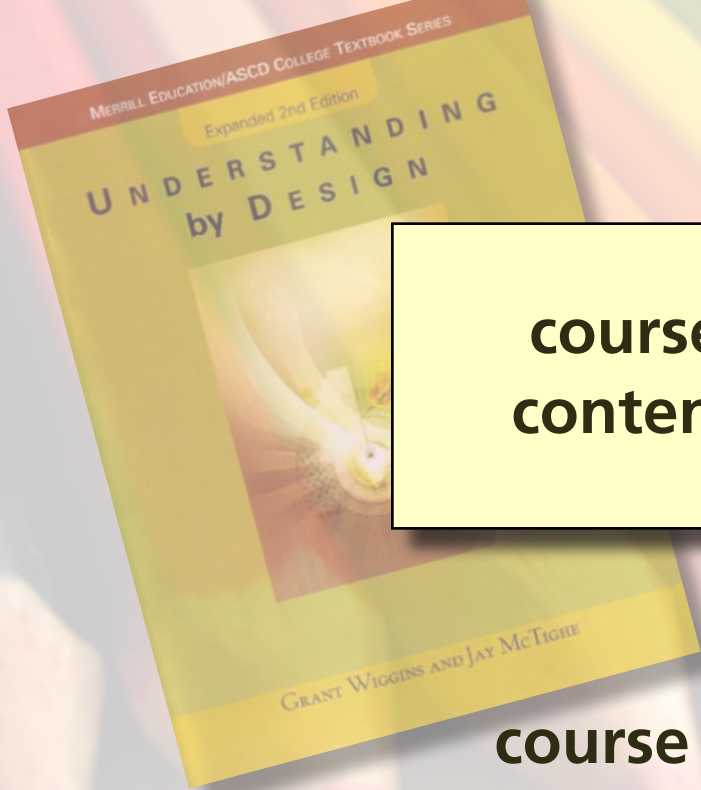
**assessment**

**1** purposes

**2** problems

**3** improvements

# Traditional approach to course planning



**course  
content**



**assessment**

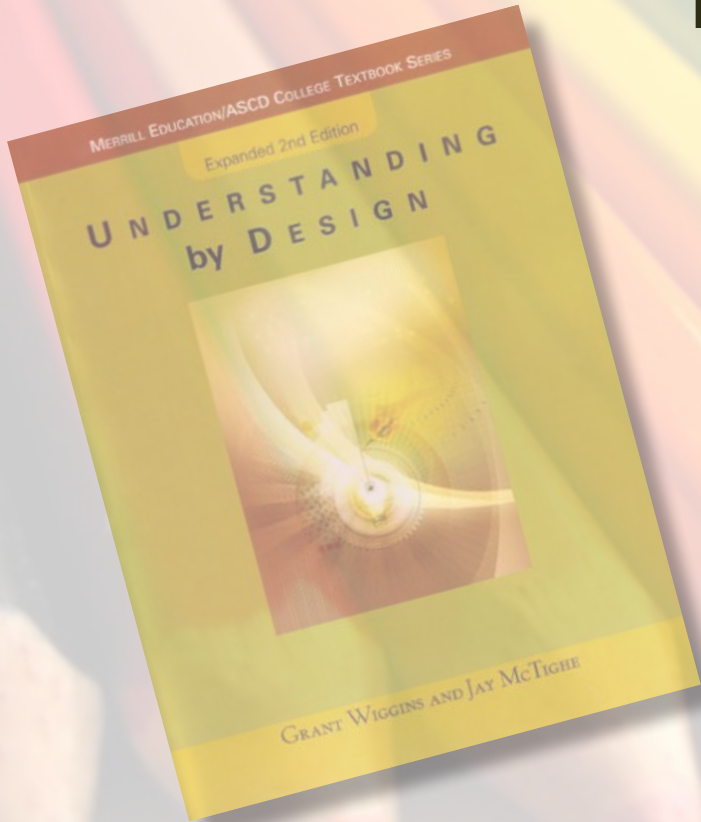
**course determined by content**

**1 purposes**

**2 problems**

**3 improvements**

# Backward design



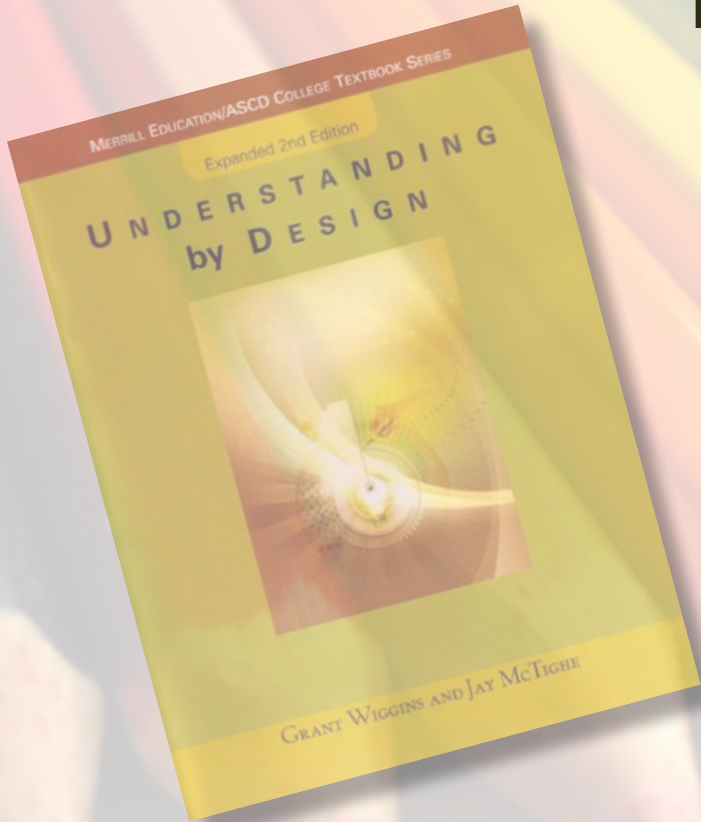
**desired  
outcomes**

**1** purposes

**2** problems

**3** improvements

# Backward design



acceptable  
evidence



desired  
outcomes

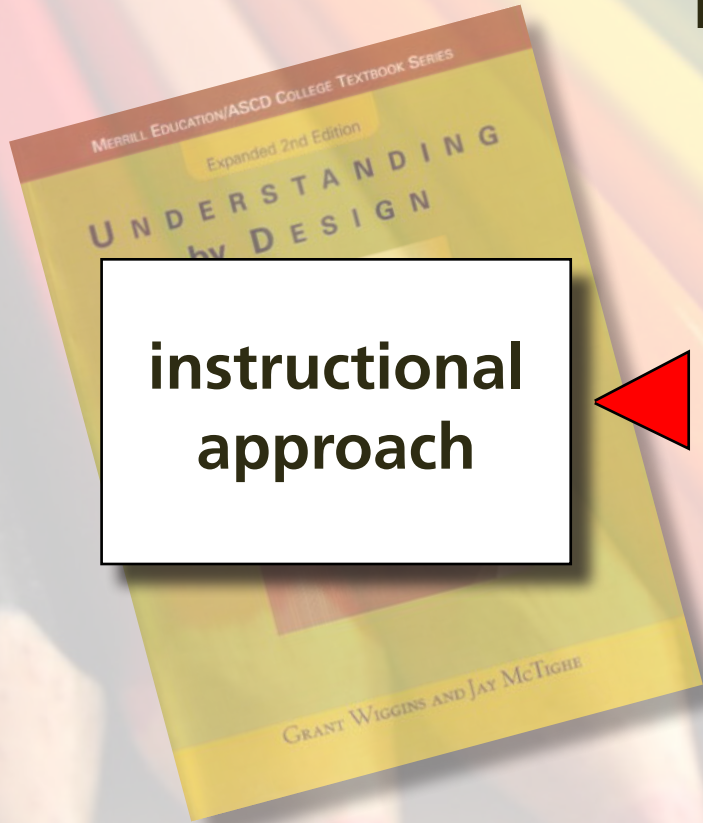
**1** purposes

**2** problems

**3** improvements



# Backward design



**instructional  
approach**



**acceptable  
evidence**



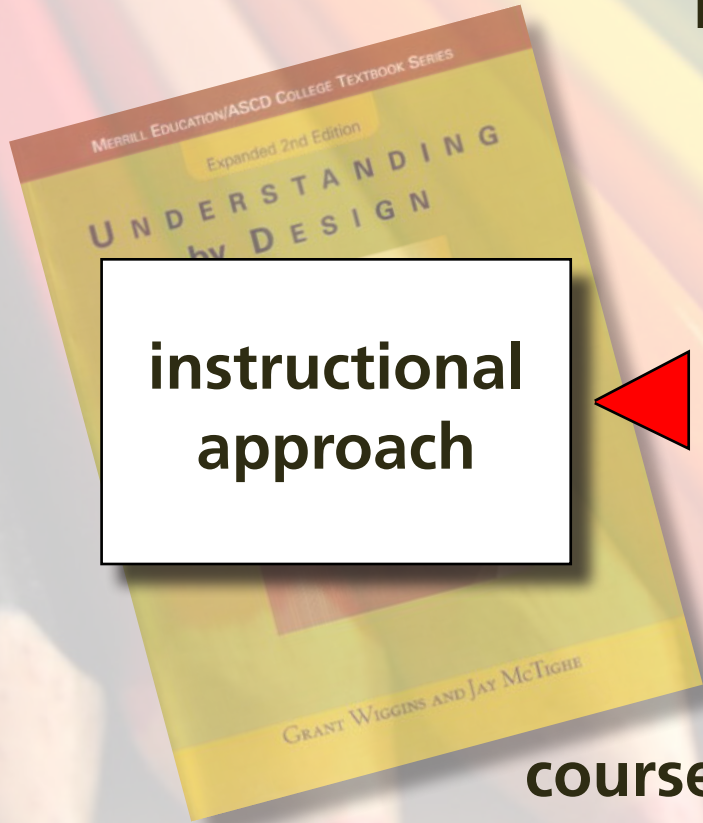
**desired  
outcomes**

**1 purposes**

**2 problems**

**3 improvements**

# Backward design



**instructional approach**



**acceptable evidence**



**desired outcomes**

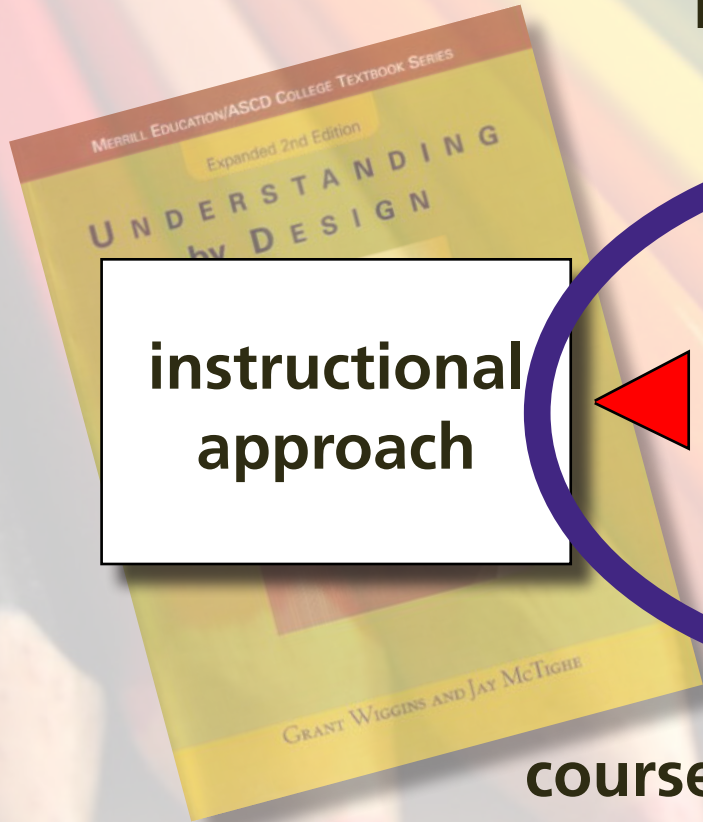
**course defined by outcomes**

**1 purposes**

**2 problems**

**3 improvements**

# 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

[cpr.molsci.ucla.edu](http://cpr.molsci.ucla.edu)

- 1 purposes
- 2 problems
- 3 improvements





A large, empty classroom with rows of desks and chairs, overlaid with the text "rethink assessment". The classroom is filled with rows of light-colored wooden desks and black chairs, arranged in a grid pattern. The floor is light blue with yellow and red lines. The walls are light-colored with a door visible in the background. The text "rethink assessment" is written in a large, bold, black font with a blue outline, centered over the image.

**rethink  
assessment**



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