

# Assessment For and Not Just of Learning



ICTCM 2017  
Chicago, IL, 11 March 2017



# Assessment For and Not Just of Learning



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**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. 1.

think

428

kennen

kannte-gekant

1. kennen-gekant

2. erkennen

3. bekannt

4. d.

Verizon 3G 4:20 PM

Flashcard

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 Books

Review

More



**35 % retained  
after 1 week**

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





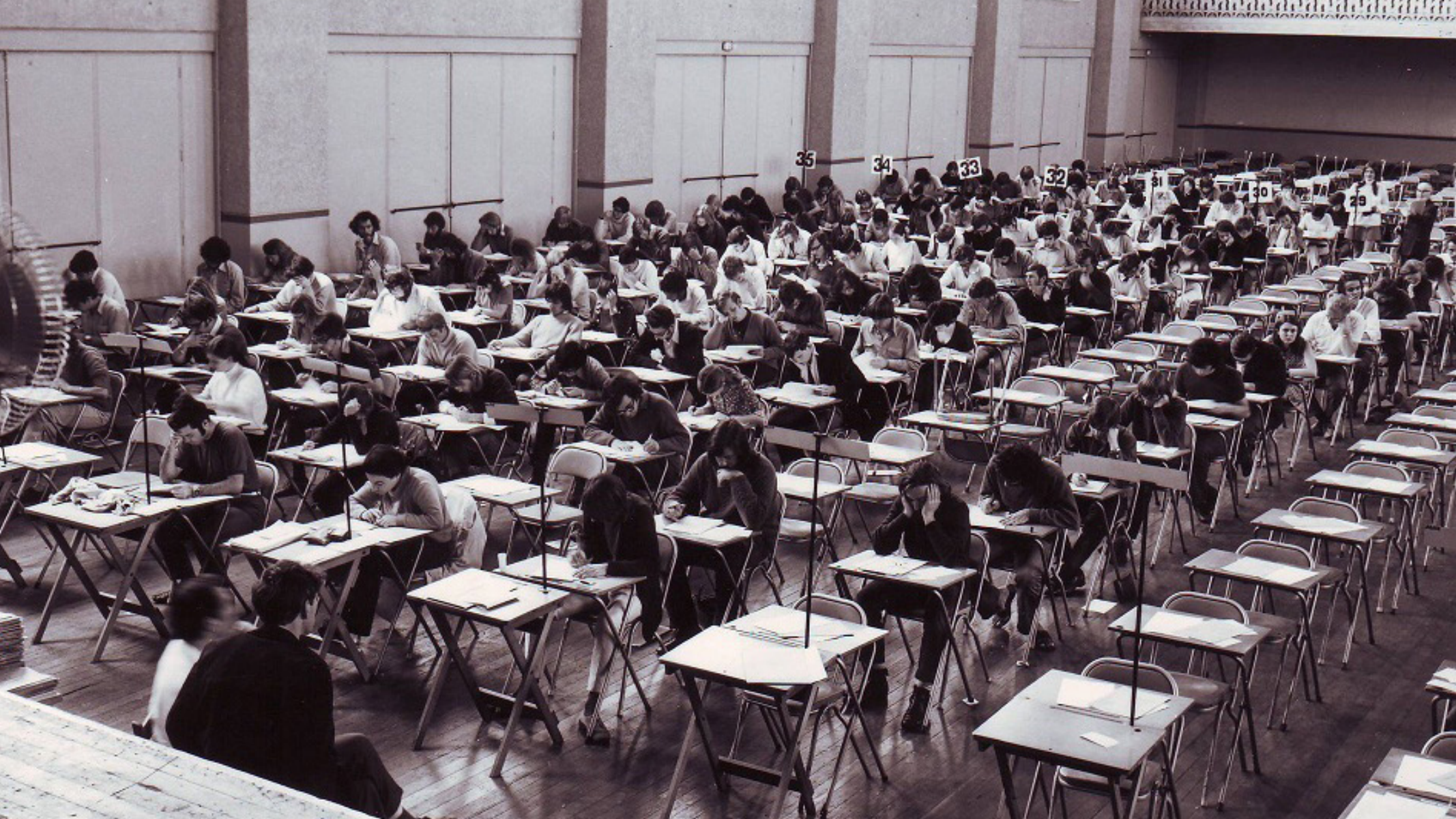














A large, dimly lit classroom filled with students sitting at desks, appearing to be in a lecture or exam setting. The students are mostly seen from behind or in profile, focused on their work. The room has high ceilings and large windows in the background. The text is overlaid in the center of the image.

**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

**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

UNKNOWN

KNOWN

1 purposes

2 problems

problem

solution

outcome

UNKNOWNN  
KNOWNN

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

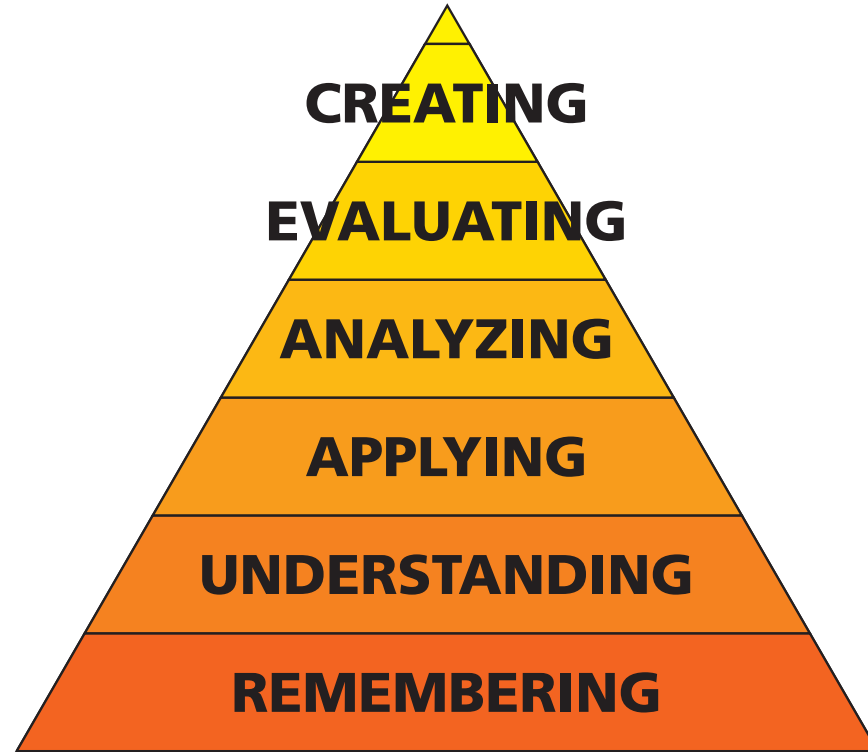
KNOWN

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 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 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?**

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

**Requires:**

**Assumptions**

**Developing a model**

**Applying that model**



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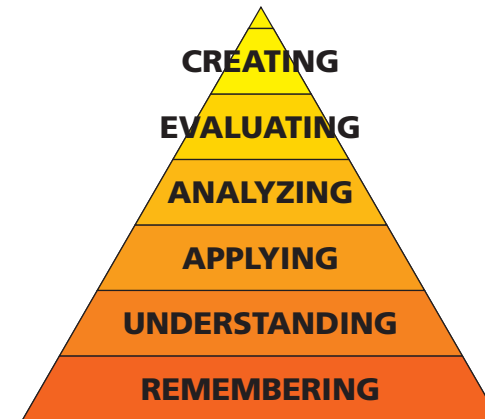
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**Requires:**

**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.**

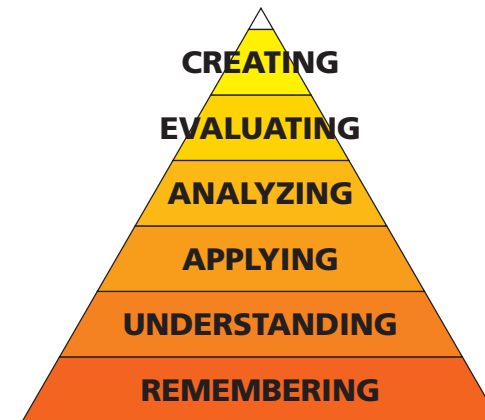
How long do you have to wait before someone frees up a space?

**Requires:**

Assumptions

**Developing a model**

**Applying that model**





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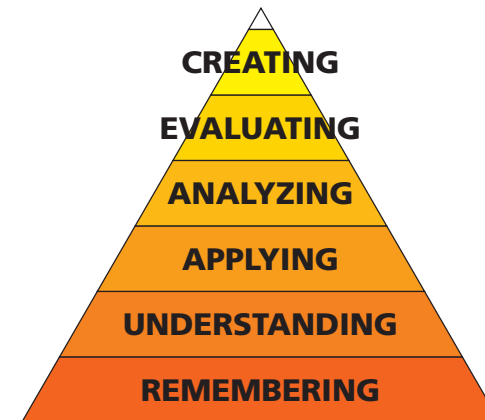
**Assuming people leave at regularly-spaced intervals, how long do you have to wait before someone frees up a space?**

**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.

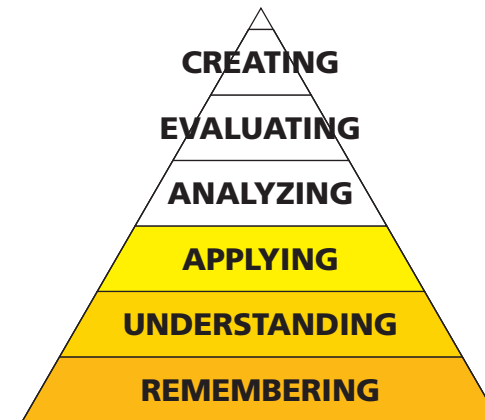
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**Requires:**

Assumptions

Developing a model

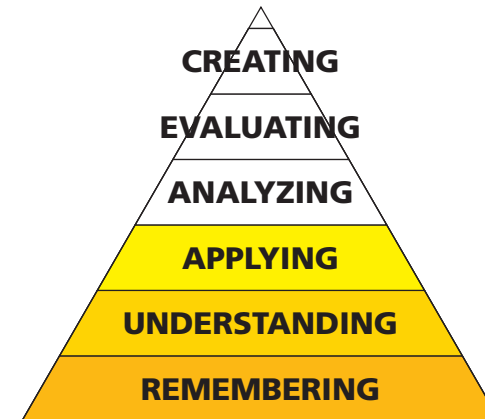
Applying that model





**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.**

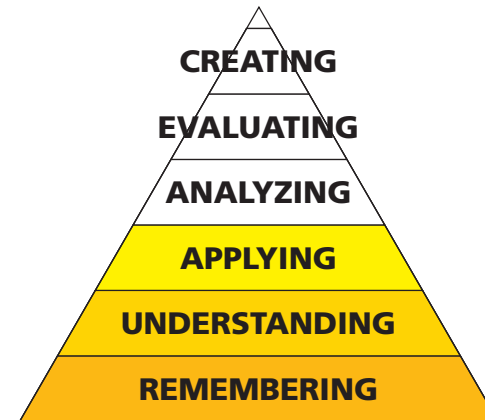
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How long do you have to wait before someone frees up a space?

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

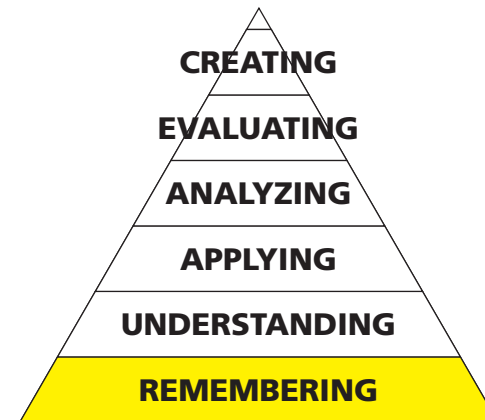




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How long do you have to wait before someone frees up a space?

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



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

UNKNOW

KNOWN

problem

p

REAL  
problem solving

KNOW

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:

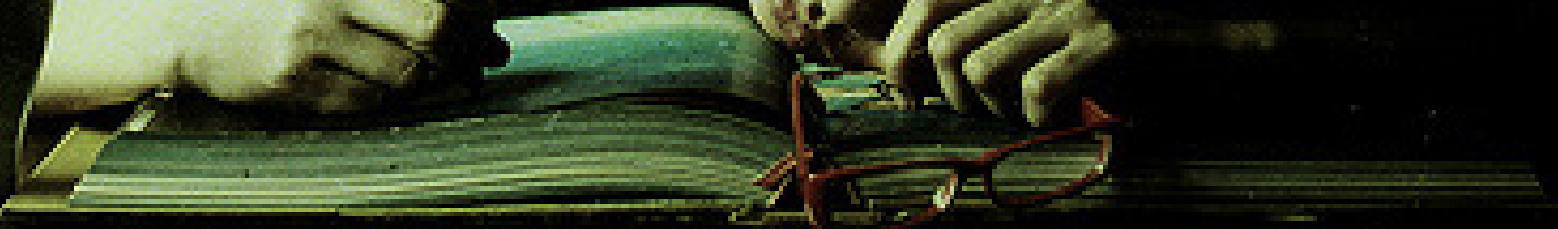
$$= \left\{ \int_{\rho=0}^4 \rho^3 d\rho \right\} \left\{ \int_{\theta=0}^{2\pi} d\theta \right\} \left\{ \frac{1}{2} \int_{\phi=0}^{\pi} \sin(2\phi) d\phi \right\} = \boxed{0}$$

1 purposes

2 problems



# high-stakes examinations promote cramming



**1** purposes

**2** problems

A person with long 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 pair of glasses is on the desk in front of them. A clock is visible in the bottom left corner of the image. The background is a plain wall.

**information stored in short-term memory**

**1** purposes

**2** problems





**no retention**

information stored in short-term memory

**no transfer**

**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.

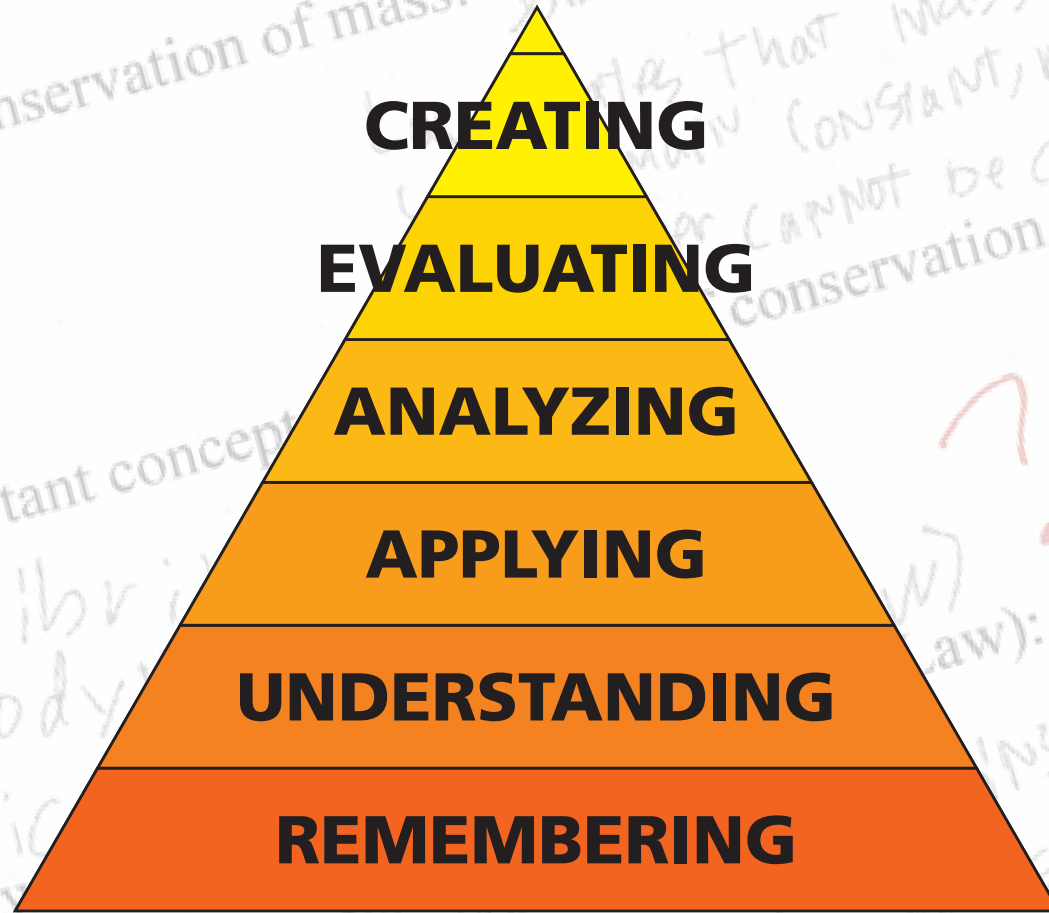
List the three important concepts that the Law of conservation of Energy leads to:  
Equilibrium (boiling)  
Thermodynamics (boiling)  
Kinetics (how-chicka-wow-wow)

... 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

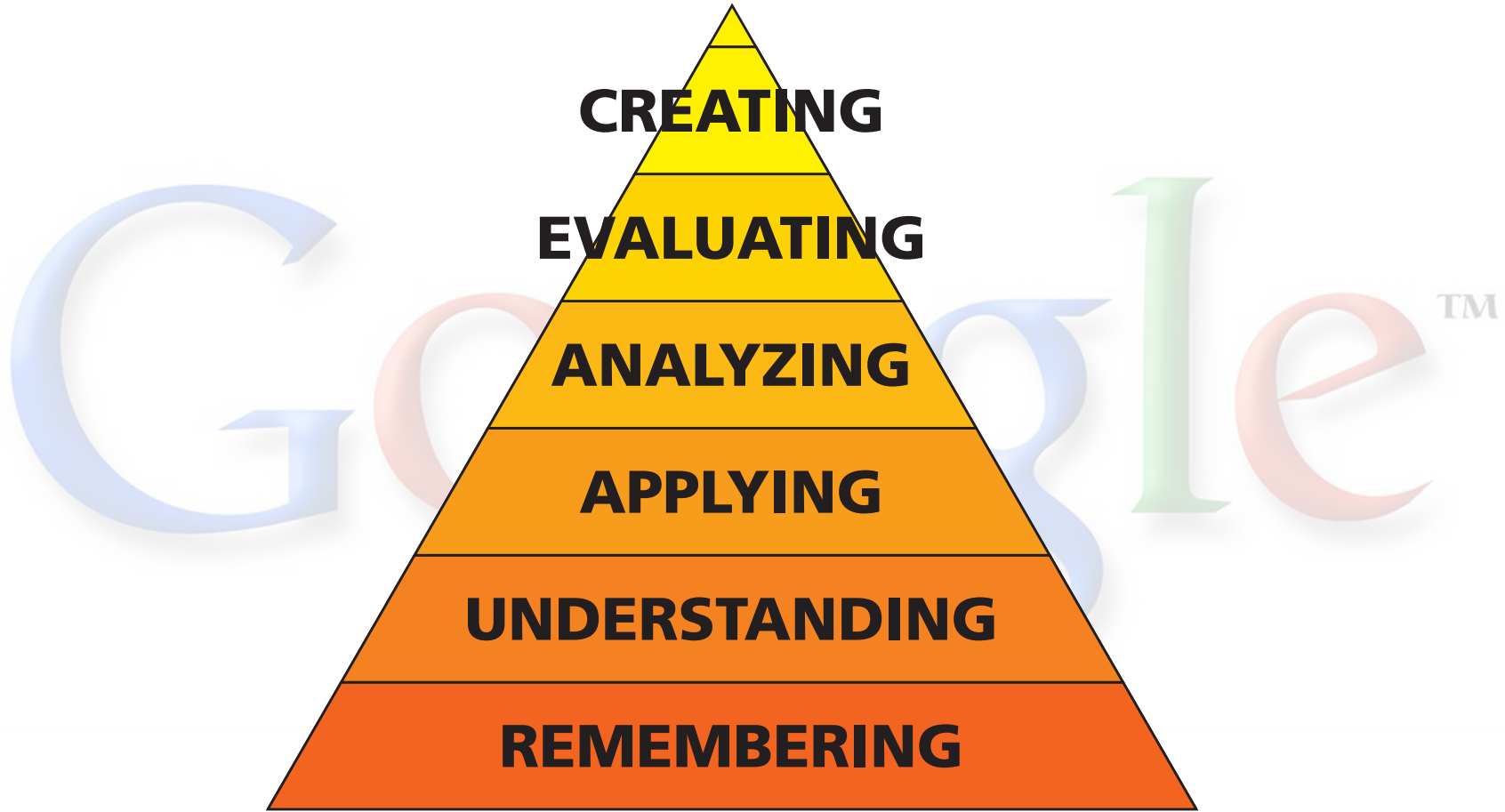
Google™

1 purposes

2 problems

3 improvements

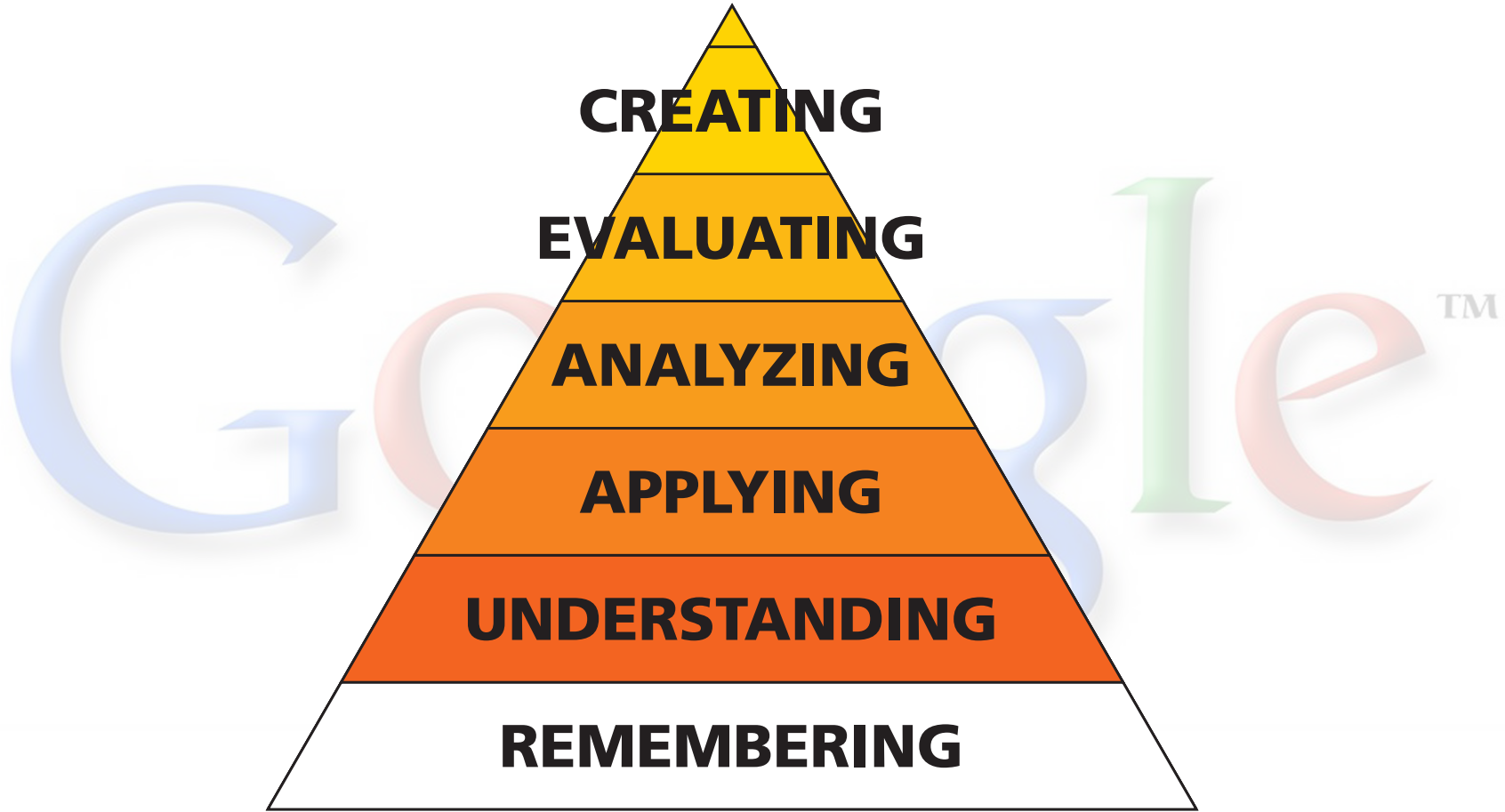




**1** purposes

**2** problems

**3** improvements



**1** purposes

**2** problems

**3** improvements



**2**

**focus on feedback, not ranking**

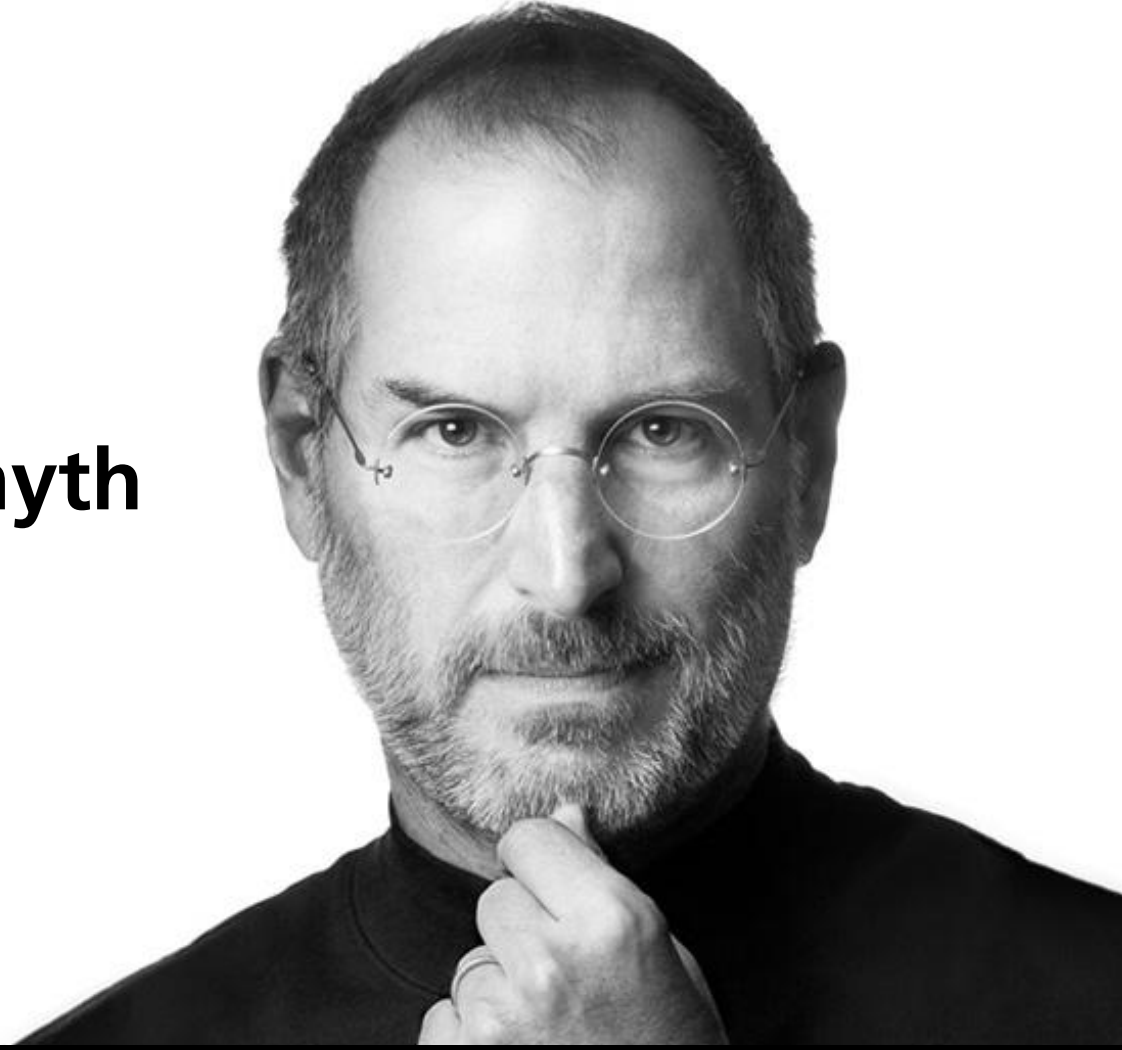
**1** purposes

**2** problems

**3** improvements



# objective ranking: a myth

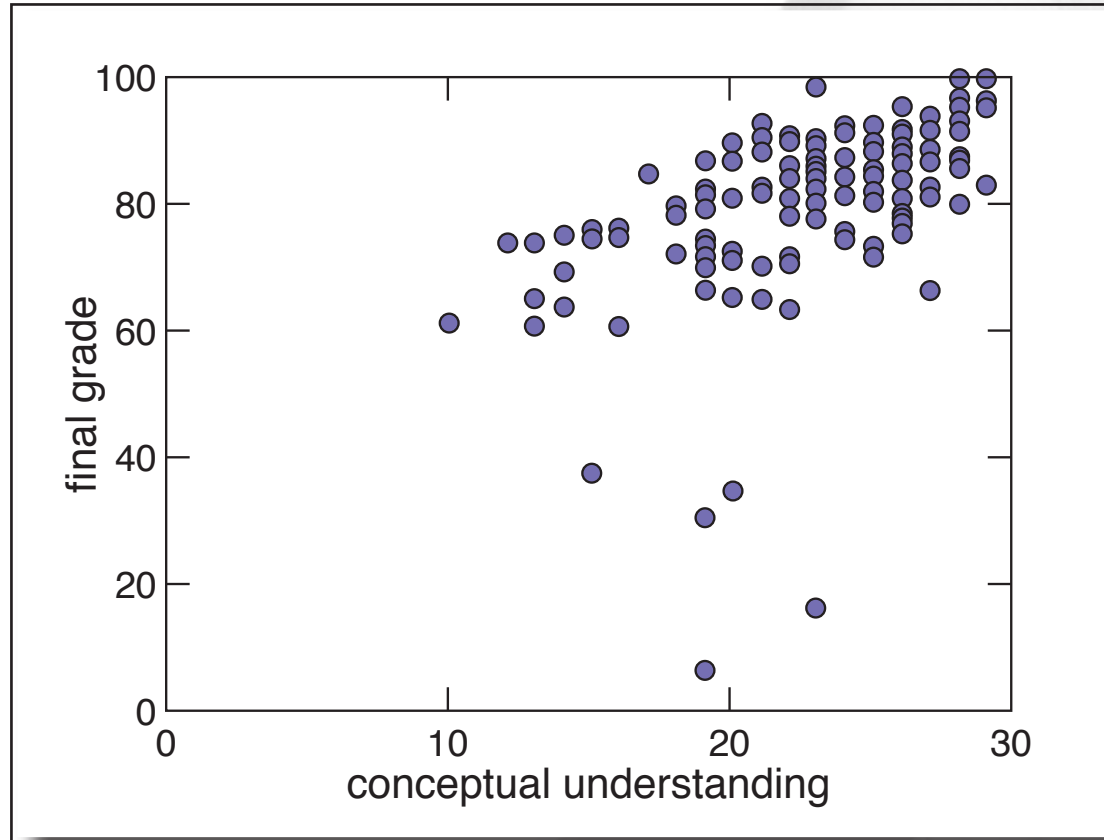


**1** purposes

**2** problems

**3** improvements

# 2 metrics, 2 results

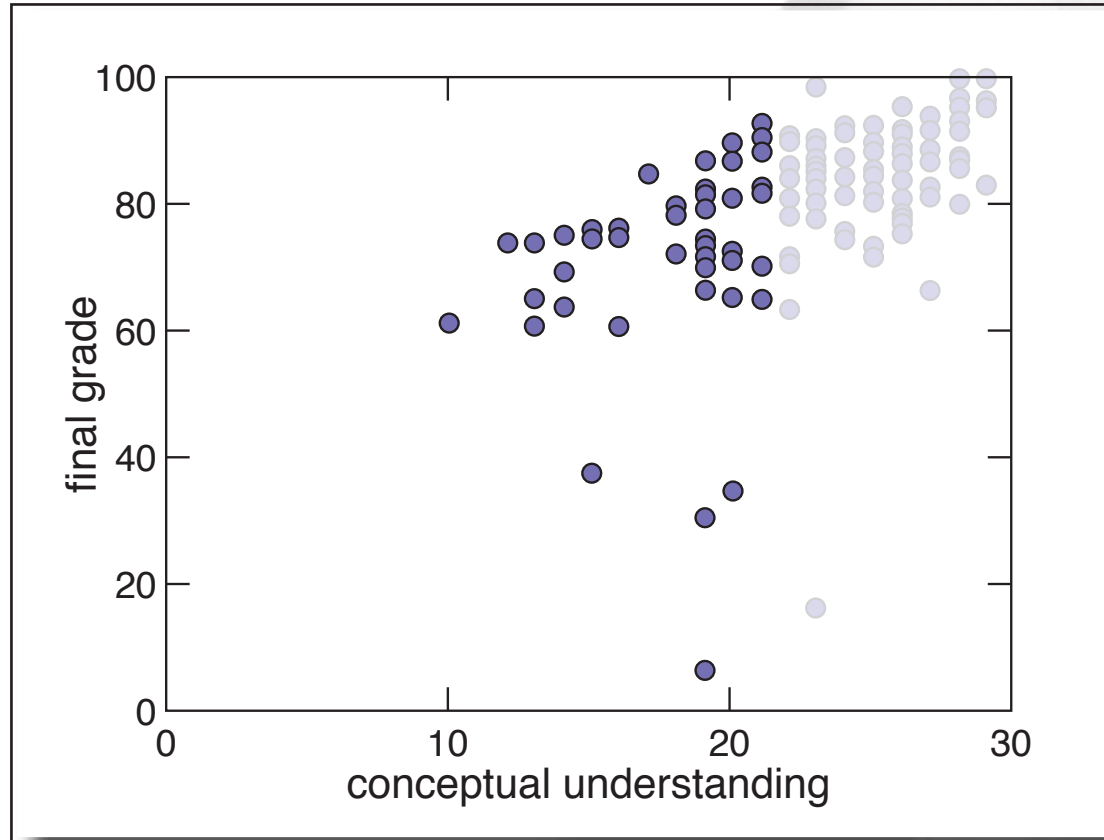


1 purposes

2 problems

3 improvements

# Aristotelian thinkers



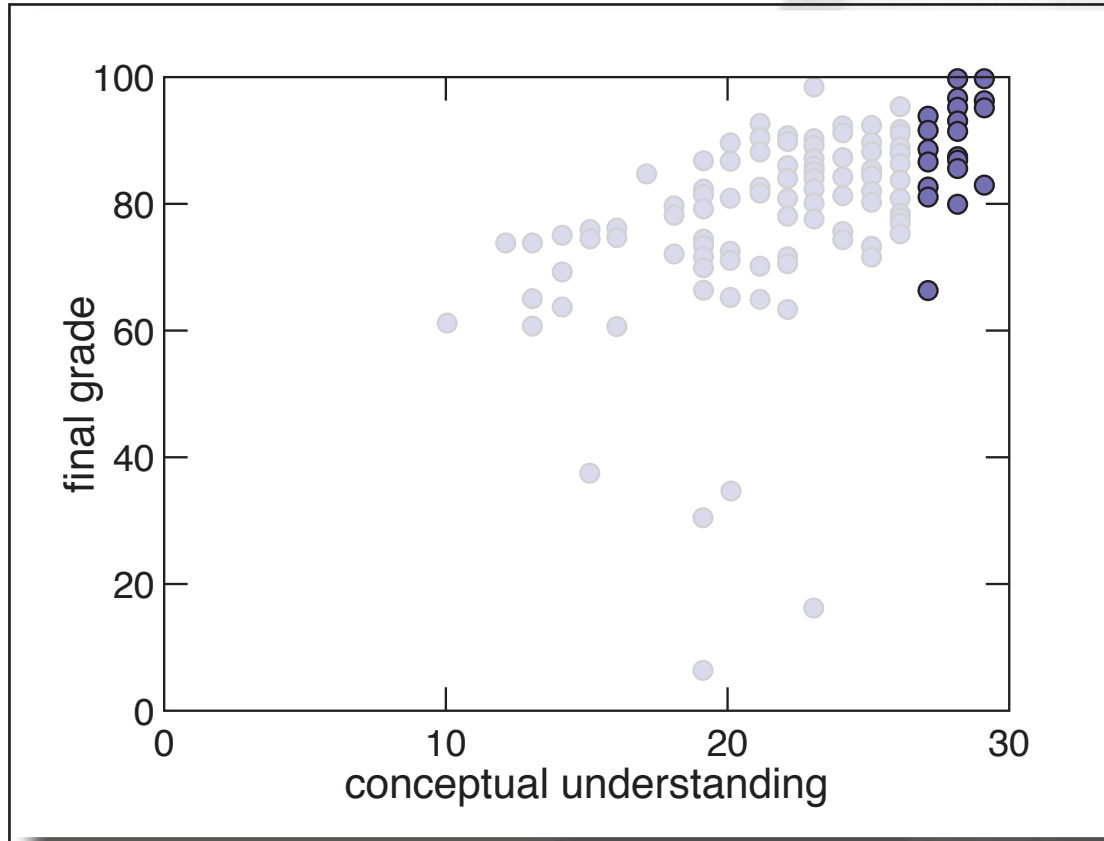
1 purposes

2 problems

3 improvements



# top performers, broad grade distribution

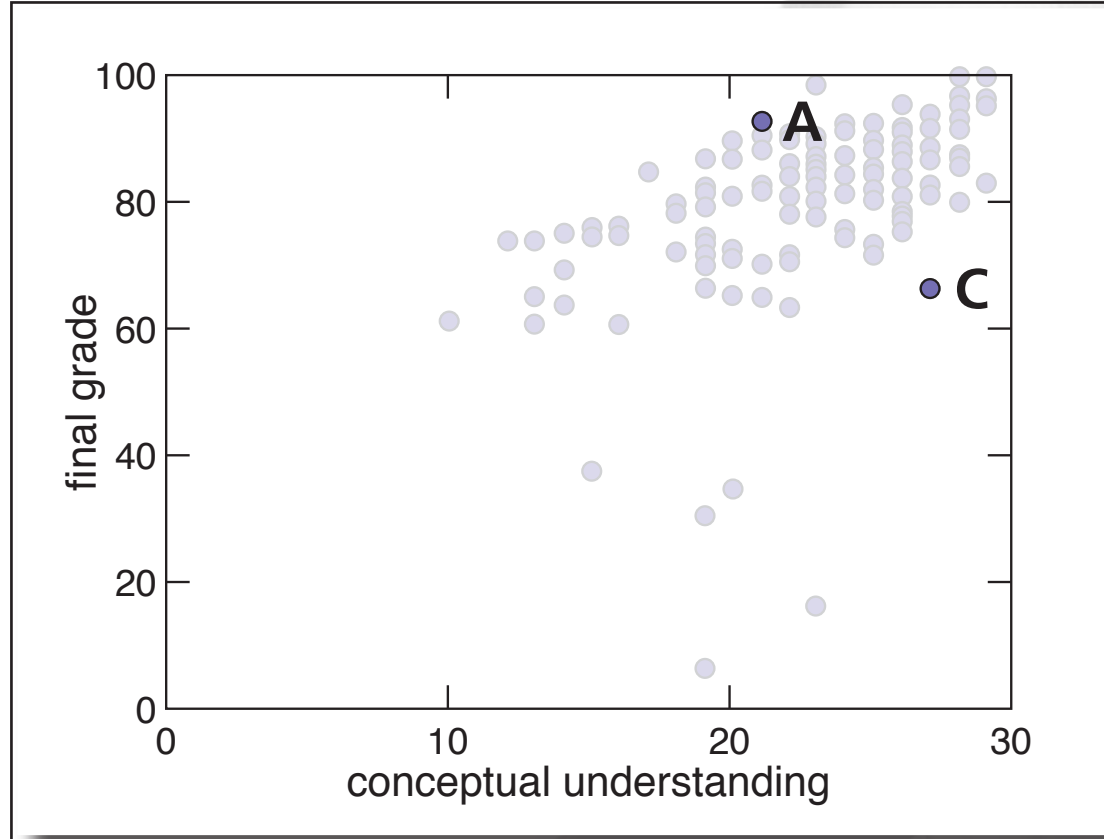


1 purposes

2 problems

3 improvements

# objectivity or injustice?



1 purposes

2 problems

3 improvements



**3**

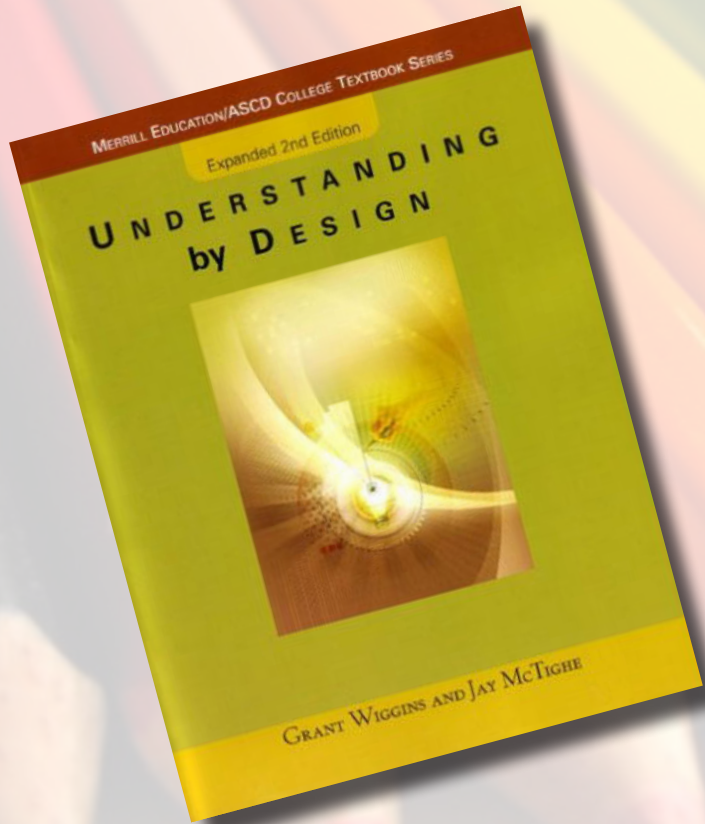
**focus on skills, not content**

**1** purposes

**2** problems

**3** improvements

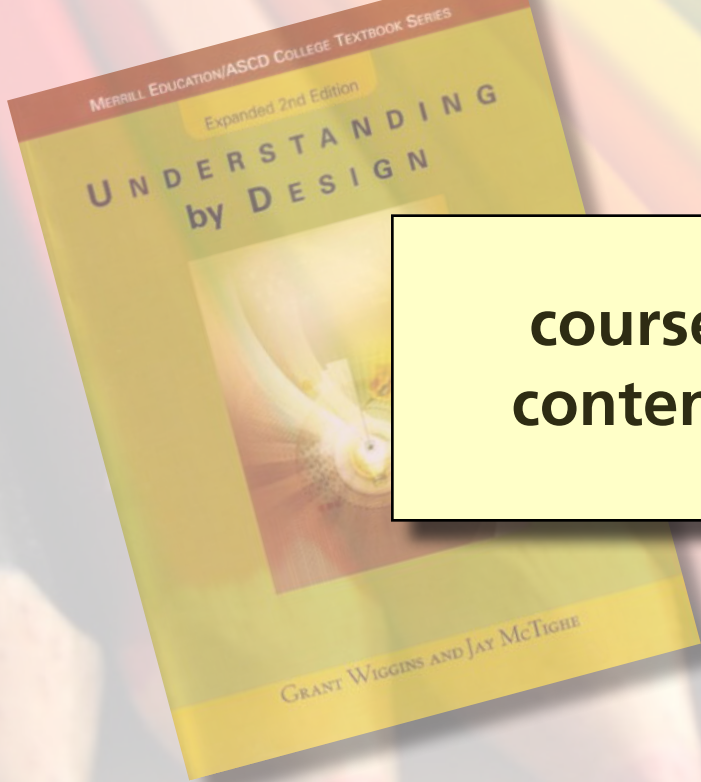




Grant Wiggins and Jay McTighe, *Understanding by Design* (Prentice Hall, 2001)

- 1 purposes
- 2 problems
- 3 improvements

# Traditional approach to course planning



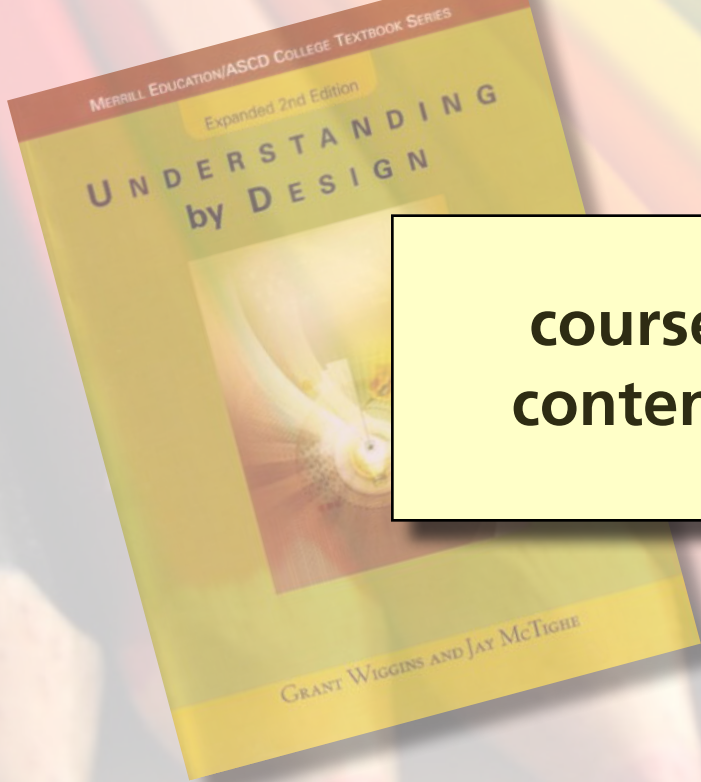
**course  
content**

**1** purposes

**2** problems

**3** improvements

# Traditional approach to course planning



**course  
content**



**assessment**

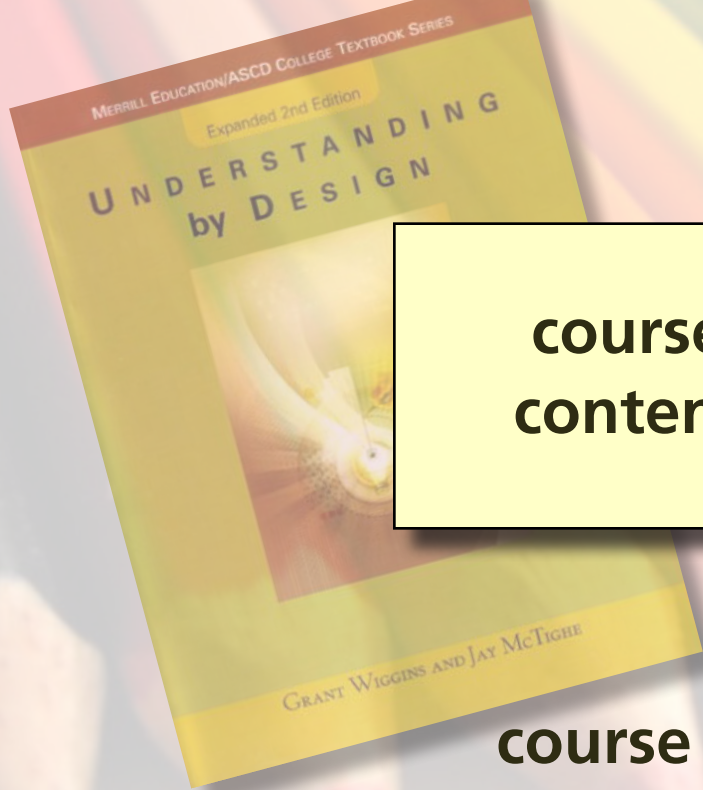
**1** purposes

**2** problems

**3** improvements



# Traditional approach to course planning



**course  
content**



**assessment**

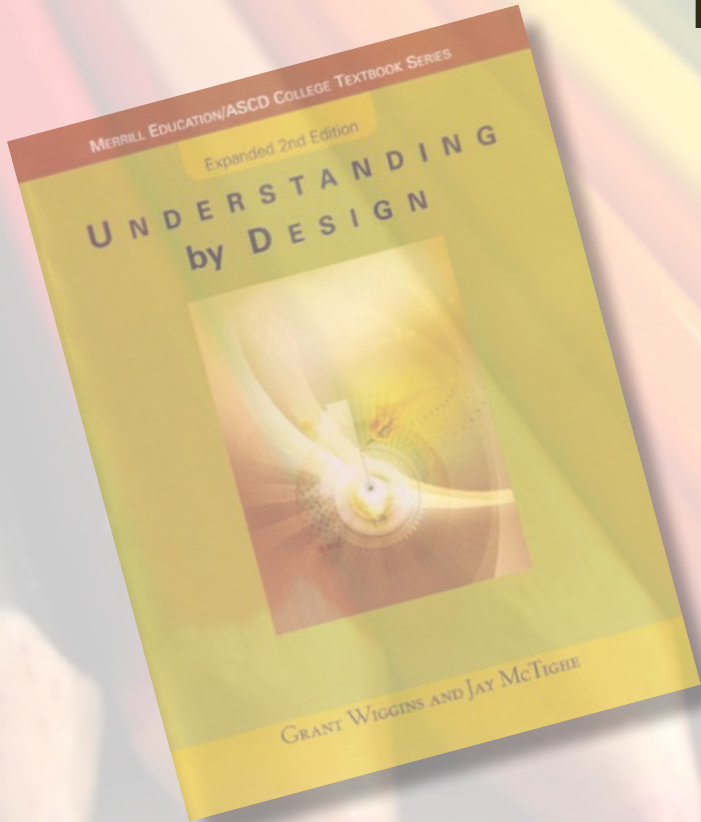
**course determined by content**

**1 purposes**

**2 problems**

**3 improvements**

# Backward design



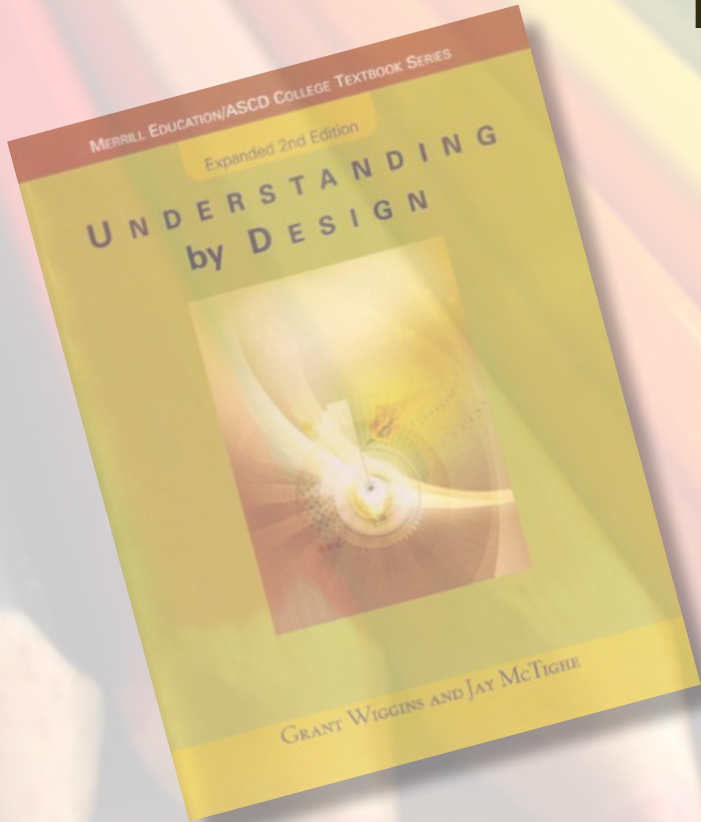
**desired  
outcomes**

**1** purposes

**2** problems

**3** improvements

# Backward design



acceptable  
evidence



desired  
outcomes

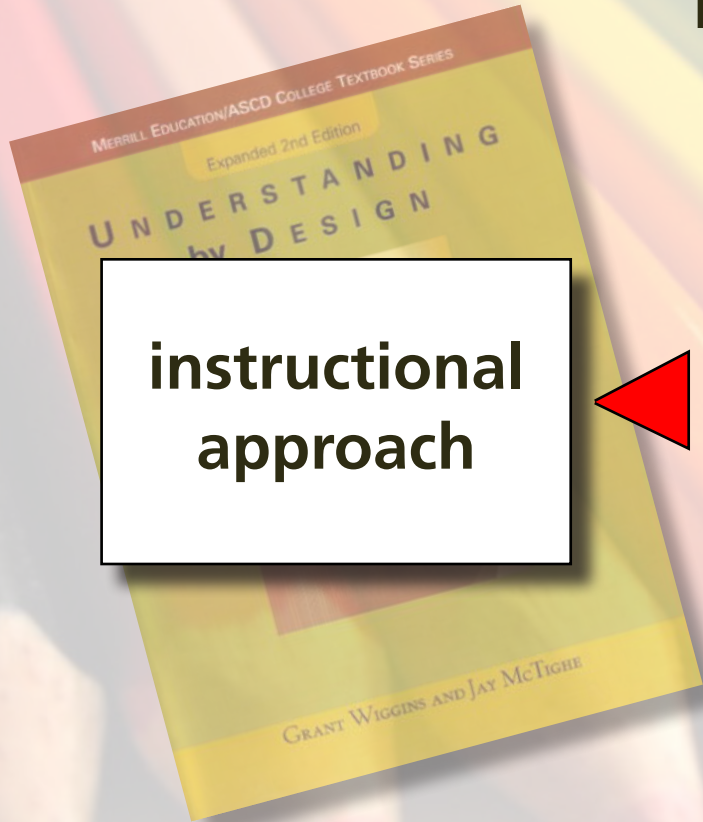
**1** purposes

**2** problems

**3** improvements



# Backward design



**instructional  
approach**



**acceptable  
evidence**



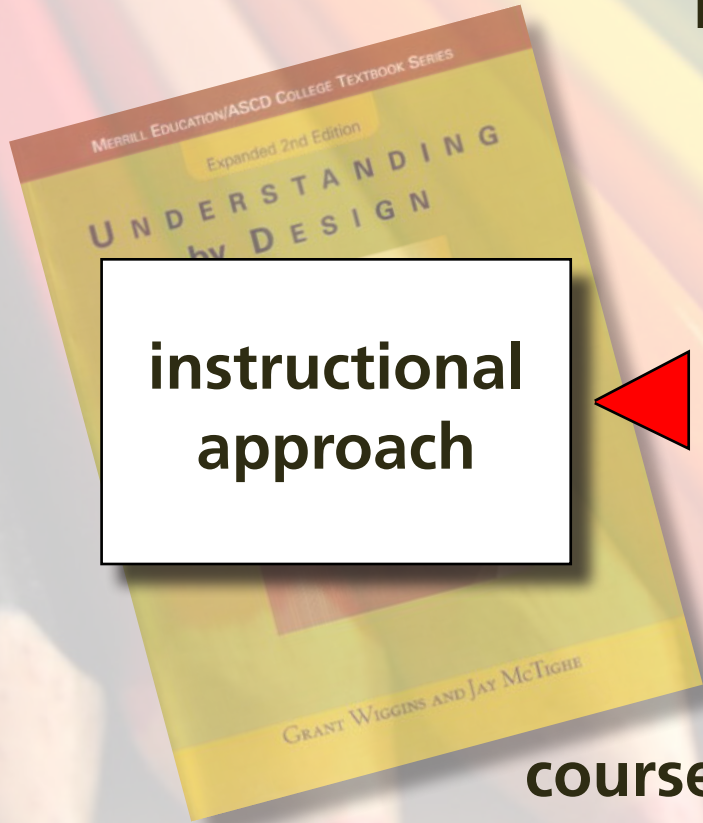
**desired  
outcomes**

**1 purposes**

**2 problems**

**3 improvements**

# Backward design



**instructional  
approach**



**acceptable  
evidence**



**desired  
outcomes**

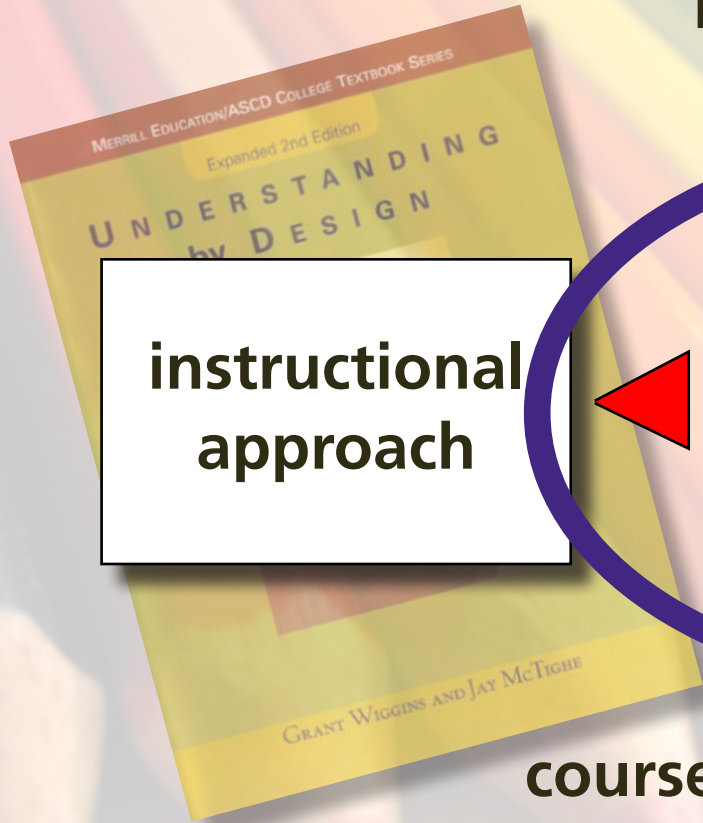
**course defined by outcomes**

**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 dark blue chairs, arranged in a grid pattern. The floor is light blue with yellow and red lines marking the aisles. The walls are a light beige color, and there are several doors 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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