Assessment For and Not Just of Learning

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kosten
1. die Kosten (pl.)
2. kostbar
3. kostbar

krank
1. die Krankheit, —, en

cow

magnificent
1. magnificent

splendid

think of

das Kind, —(e)s, —
1. kindisch
2. kindlich

kennen
1. kennen-gekannt
2. kennen-lernen
3. kennen
4. kennenkennt
5. kennen
6. kennen

irreg.

master

der Kellner, —s, —
1. der Keller, —s, —
pedantic
adj. ostentatious in one's learning
35% retained after 1 week
we only guarantee they’ll pass the test
assessment focussed on ranking and classifying, not on developing 21st century skills
purposes
purposes

problems
purposes
problems
improvements
how many different purposes of assessment can you think of?
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
what is the meaning/definition of...?
inauthentic problem solving
problem

1 purposes
2 problems
purposes

1. problem
2. problems

outcome
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
1 purposes
2 problems
1. purposes
2. problems
1. purposes
2. problems

Thinking skills
- Creating
- Evaluating
- Analyzing
- Applying
- Understanding
- Remembering
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.
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How long do you have to wait before someone frees up a space?
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Requires:
Assumptions
Developing a model
Applying that model
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- 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
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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 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?

\[ t_{\text{wait}} = \frac{T_{\text{shop}}}{N_{\text{spaces}}} \]
computers can do this!
1 purposes
2 problems
purposes

problems
REAL

problem solving

1 purposes

2 problems
grading incompatible with real problem solving
isolation

1 purposes
2 problems
We will use spherical coordinates: 
$0 \leq \phi \leq \frac{\pi}{4}$, $0 \leq \theta \leq 2\pi$, $\leq \phi \leq \pi$.

The integral is thus:

\[
\int_{0}^{\frac{\pi}{4}} \int_{0}^{2\pi} \int_{\phi}^{\pi} \sin(2\phi) \, dp \, d\theta \, d\phi
\]

\[
= \left\{ \int_{0}^{\frac{\pi}{4}} \sin(2\phi) \, d\phi \right\} \left\{ \int_{0}^{2\pi} \right\} \left\{ \frac{\pi}{2} \right\}
\]

\[
= 0
\]
high-stakes examinations promote cramming

1 purposes

2 problems
information stored in short-term memory
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
... but ...

- Equilibrium (boring)
- Thermodynamics (boring)
- Kinetics (boom-chicka-wow-wow)

List the three important concepts that the Law of conservation of Energy leads to:

1. purposes
2. problems
1. Remembering
2. Understanding
3. Applying
4. Analyzing
5. Evaluating
6. Creating

1 purposes
2 problems
only lowest order thinking skills can be judged objectively
and then there is…

• grade inflation
• cheating
1 purposes
2 problems
3 improvements
mimic real life
open-book exam

1. purposes
2. problems
3. improvements
REMEMBERING
UNDERSTANDING
APPLYING
ANALYZING
EVALUATING
CREATING

1 purposes
2 problems
3 improvements
1. purposes
2. problems
3. improvements
focus on feedback, not ranking
objective ranking: a myth

1 purposes
2 problems
3 improvements
2 metrics, 2 results

- final grade vs. conceptual understanding

1. purposes
2. problems
3. improvements
Aristotelian thinkers
top performers, broad grade distribution

1. purposes
2. problems
3. improvements
objectivity or injustice?

![Graph showing conceptual understanding vs. final grade with points A and C.]
3 focus on skills, not content
Grant Wiggins and Jay McTighe, *Understanding by Design* (Prentice Hall, 2001)

1. purposes
2. problems
3. improvements
Traditional approach to course planning

1. purposes
2. problems
3. improvements
Traditional approach to course planning

1 purposes

2 problems

3 improvements

- course content
- assessment
Traditional approach to course planning

1. purposes
2. problems
3. improvements

Course determined by content

Course content → assessment
Backward design

1. purposes
2. problems
3. improvements

desired outcomes
Backward design

1. purposes
2. problems
3. improvements

acceptable evidence

desired outcomes
Backward design

1. purposes
2. problems
3. improvements

- instructional approach
- acceptable evidence
- desired outcomes
Backward design

1. purposes
2. problems
3. improvements

 instructional approach

acceptable evidence

desired outcomes

course defined by outcomes
Backward design

1. purposes
2. problems
3. improvements

course defined by outcomes

- instructional approach
- acceptable evidence
- desired outcomes
4 resolve coach/judge conflict
use external evaluators
peer- and self-assessment

1. purposes
2. problems
3. improvements
Calibrated Peer Review

cpr.molsci.ucla.edu

1. purposes
2. problems
3. improvements
rethink assessment
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