Rethinking student learning evaluation in higher education

Program for Innovative Teaching and Learning in Chile
Harvard University, LASPAU
Cambridge, MA
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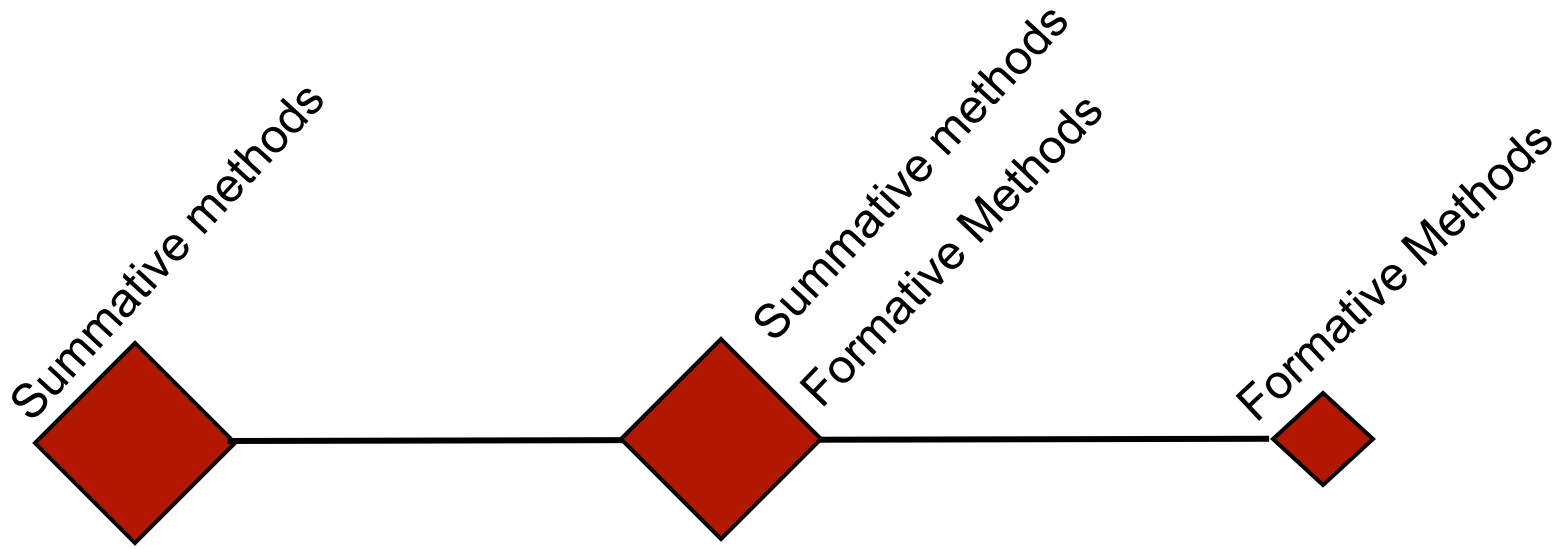
What is student learning evaluation?

2 general methods of measuring student learning



- No on off button
- Only last click counts
- Answer displays screen

Think of a typical exam or essay test in your course

How do you think your evaluations measure authentic student learning?

1. Very well
2. Well
3. Medium
4. Poorly
5. Very poorly

Think of a typical exam or essay test in your course

How do you think your COLLEAGUES' evaluations measure authentic student learning?

1. Very well
2. Well
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Essential questions

Essential Questions for Rethinking Student Learning (SL) Evaluation

1. What is my approach to evaluation?

2. Why should I rethink my approach to evaluation?

3. How can I rethink my approach to evaluation?

Workshop Goals

After this workshop you should be able to:

1.Identify your own approach and 2 Big Reasons for rethinking evaluation

2. Identify some best-practices for designing effective evaluations

3. Select several techniques for using evaluation as a learning tool

Outline

- 2 big reasons for rethinking evaluation
- Best practices for evaluation design
- Evaluation techniques for enhancing learning

2 Big Reasons to Rethink Evaluation

#1: Students can study hard, perform well, and pass courses, without understanding.

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Concept: Free-falling bodies

When a body is in free fall, it moves faster every second it falls.

Formula for distance traveled in free fall: $D=1/2 * g * t^2$

2 Big Reasons to Rethink Evaluation

#1: Students can study hard, perform well, and pass courses, without understanding.

You are standing on top of a baseball stadium, and you drop a baseball onto the field. It takes 8 seconds to land on home plate.

Estimate how tall the building is?

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1. 39.2 Meters
2. 78.4 Meters
3. 313.5 Meters
4. 626.4 Meters

2 Big Reasons to Rethink Evaluation

#1: Students can study hard, perform well, and pass courses, without understanding.

You are standing on top of a baseball stadium, and you drop a baseball onto the field. It takes 8 seconds to land on home plate, which is elevated 1- inch from the ground.

Estimate how tall the building is?

1. 39.2 Meters
2. 78.4 Meters
3. 313.5 Meters
4. 626.4 Meters

Explain why time is the only required variable to determine the height of the stadium.

Why should we rethink evaluation?

Big Reason #1

Students can study hard, perform well, and pass courses, without understanding.

2 Big Reasons to Rethink Evaluation

#2: We are culprits: we evaluate and reward achievement of irrelevant skills, not critical abilities.

To get from his high school to his home, Martin travels 5.0 miles east and then 4.0 miles north. When Veronica goes to her home from that same high school, she travels 8.0 miles east and 2.0 miles south.

What is the approximate measure of the shortest distances, between Martin's home and Veronica's home?

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1. ~3 miles
2. ~6 miles
3. ~9 miles
4. ~17 miles

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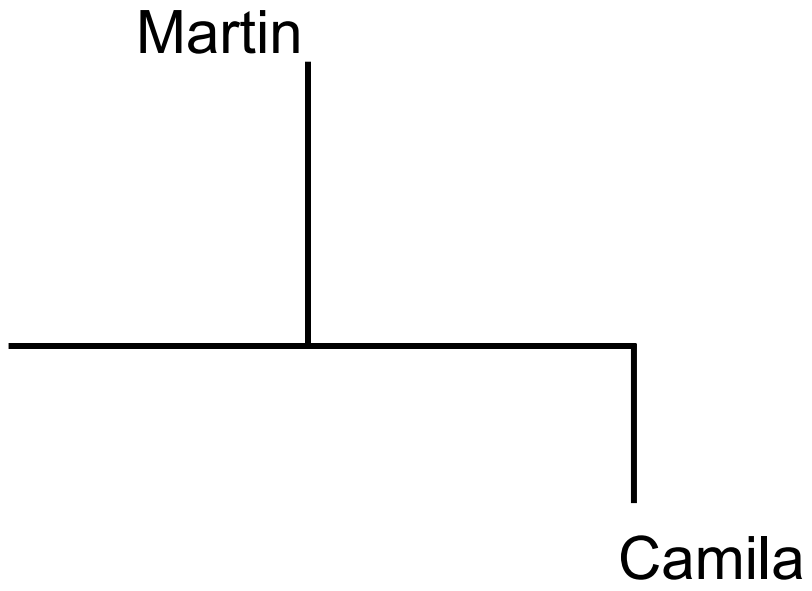

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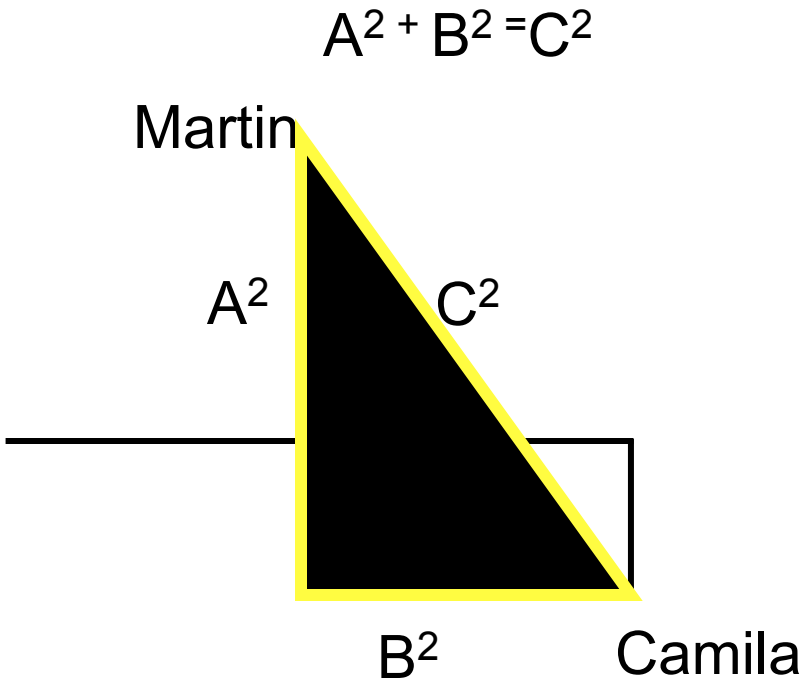

2 Big Reasons to Rethink Evaluation

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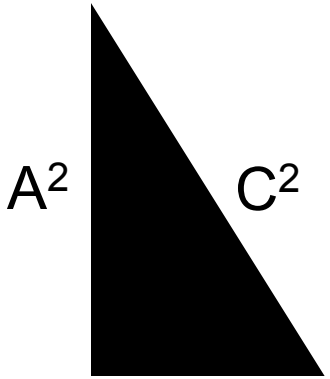
What we see= *same context*

$A^2 + B^2 = C^2$



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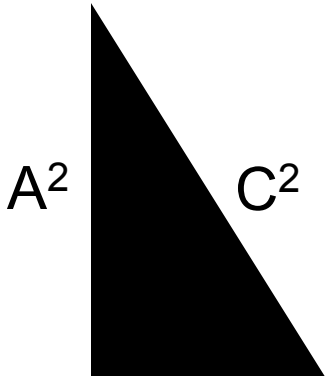


2 Big Reasons to Rethink Evaluation

#2: We are culprits: we evaluate and reward achievement of irrelevant skills, not critical abilities.

What they see= *foreign context*

Why should we rethink evaluation?

Big Reason #2

We are culprits: we use assessment as an end, when its true power lies in serving as a means for enhancing learning.

Why should we rethink evaluation?

Big Reason #2

The most important skill we can teach our students is to transfer knowledge.

Why should we rethink evaluation?

Core Idea

Current approaches to evaluation are used as an end.

And lure students and faculty into a false sense of security about student learning.

Create silos, learning is bounded, innovations restricted.

Why should we rethink evaluation?

Message

Using evaluation as a teaching tool is the single most important step we can take to improve student learning.*

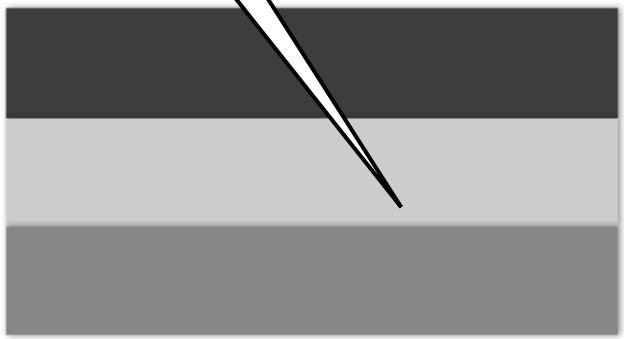
McClymer & Knowles, 1992

Outline

- 2 big reasons for rethinking evaluation
- Best practices for evaluation design
- Evaluation enhanced-learning techniques

Best practices for evaluation design

- separate from teaching & learning
- periodic
- late
- unidimensional
- not authentic
- homogenous
- vague



Traditional evaluation

Teaching

Best practices for evaluation design

Grading not evaluation

- separate from teaching & learning
- periodic
- late
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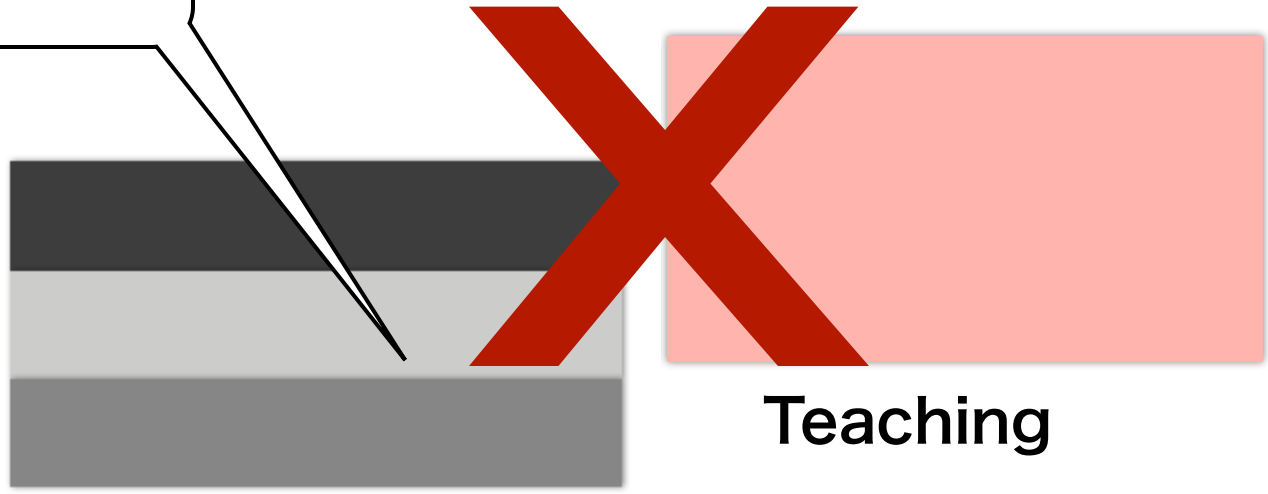

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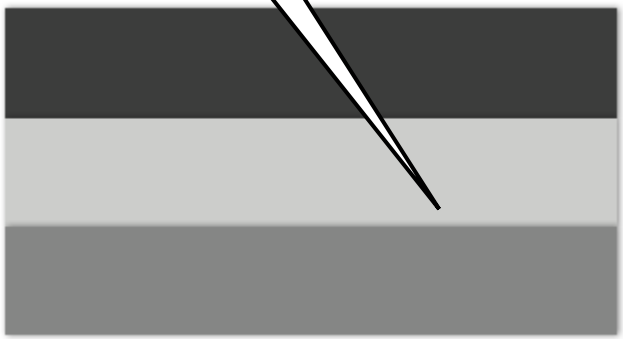
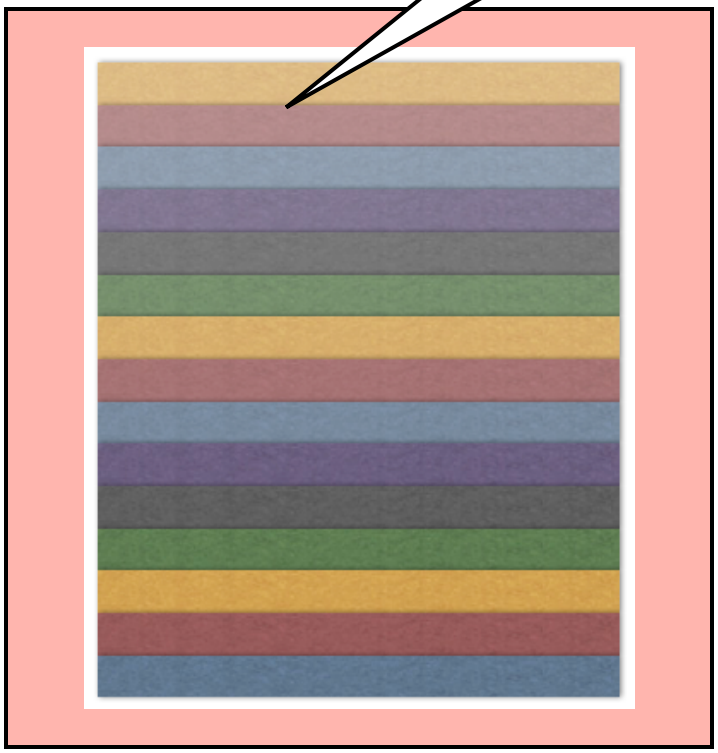


Traditional evaluation

- linked
- frequent
- early
- multidimensional
- authentic
- heterogenous
- specific

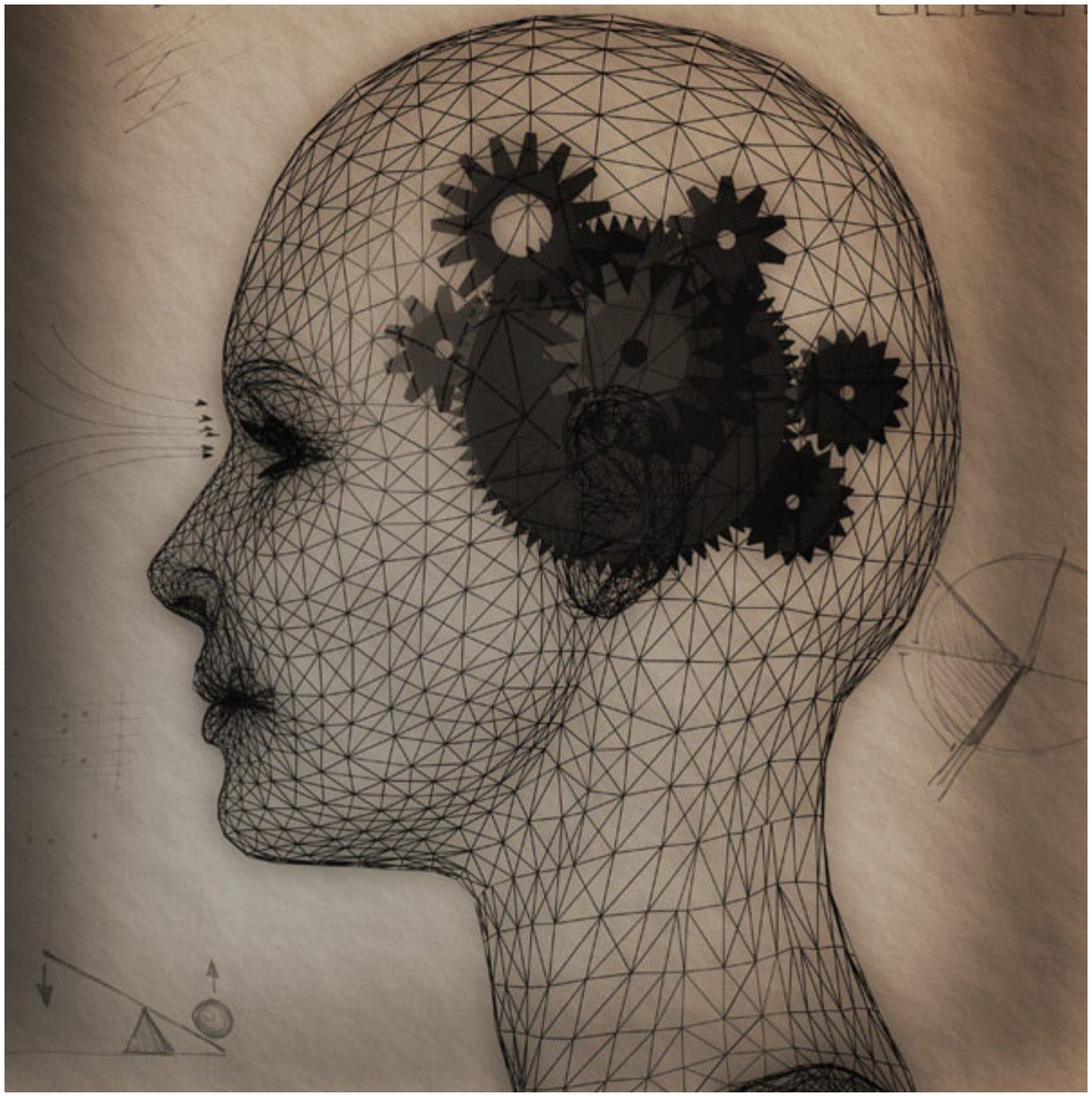


Evaluation-Enhanced Learning

Outline

- 2 big reasons for rethinking evaluation
- Best practices for evaluation design
- Evaluation enhanced-learning techniques

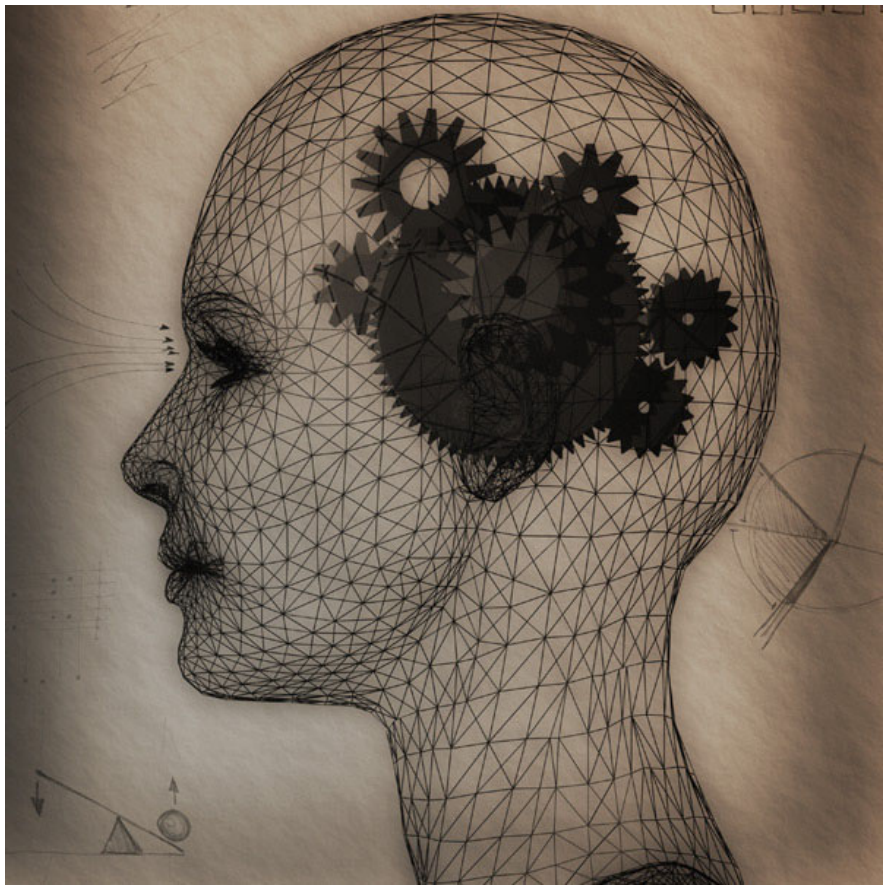
Evaluation-Enhanced Learning Techniques



Evaluation-enhanced learning techniques

Tip: Effective learning requires self-monitoring and retrieval practice.

Response systems provide hundreds of opportunities for self-monitoring and retrieval practice.



*UbD, 2005

Evaluation-enhanced learning techniques

#1: Response Systems: Self-monitoring and retrieval practice

Polling	Recall	Conceptual	Knowledge Transfer	Procedural
Checks for Opinions	Requires students to have memorized facts.	Requires students not only to recall information, but also to understand the concepts associated	Requires students to apply their knowledge and understanding to particular situations and contexts	Requires students to apply knowledge of a procedure or technique to a particular problem or situation

Reference: Derek Bruff and others, *Teaching with Classroom Response Systems*

Evaluation-enhanced learning techniques

#1: Response Systems: Self-monitoring and retrieval practice

Polling

Checks for Opinions

Think of a typical exam or essay test in your course

How do you think your evaluations measure authentic student learning?

1. Very well
2. Well
3. Medium
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5. Very poorly

Evaluation-enhanced learning techniques

#1: Response Systems: Self-monitoring and retrieval practice

Prediction	Peer Assessment	Student Perspectives	Confidence Level	Monitoring questions
Requires students to predict the outcome of an experiment or situation.	Requires students to assess each other's presentations, papers, or other work during class	Provides useful information about students to help instructors tailor learning experiences to the unique makeup of students.	Provides instructors with a level of information about their student's learning beyond a simple assessment of their accuracy .	Provides instructors with an opportunity to monitor various aspects of the student learning experience beyond comprehension and confidence levels.

Reference: Derek Bruff and others, *Teaching with Classroom Response Systems*

Evaluation-enhanced learning techniques

#1: Response Systems: Self-monitoring and retrieval practice

Prediction
Requires students to predict the outcome of an experiment or situation. If you arrange for 50 faculty to take a workshop on student learning evaluation, predict the percentage who will actually change their approach to evaluation? 1. <10% 2. 11-25% 3. 26-75% 4. 75%+

Evaluation-enhanced learning techniques

#1: Response Systems: Self-monitoring and retrieval practice

Critical Thinking	One-best-answer
Requires students to analyze relationships among multiple concepts or make evaluations based on particular criteria	Requires students to apply knowledge of a procedure or technique to a particular problem or situation

Reference: Derek Bruff and others, *Teaching with Classroom Response Systems*

Evaluation-enhanced learning techniques

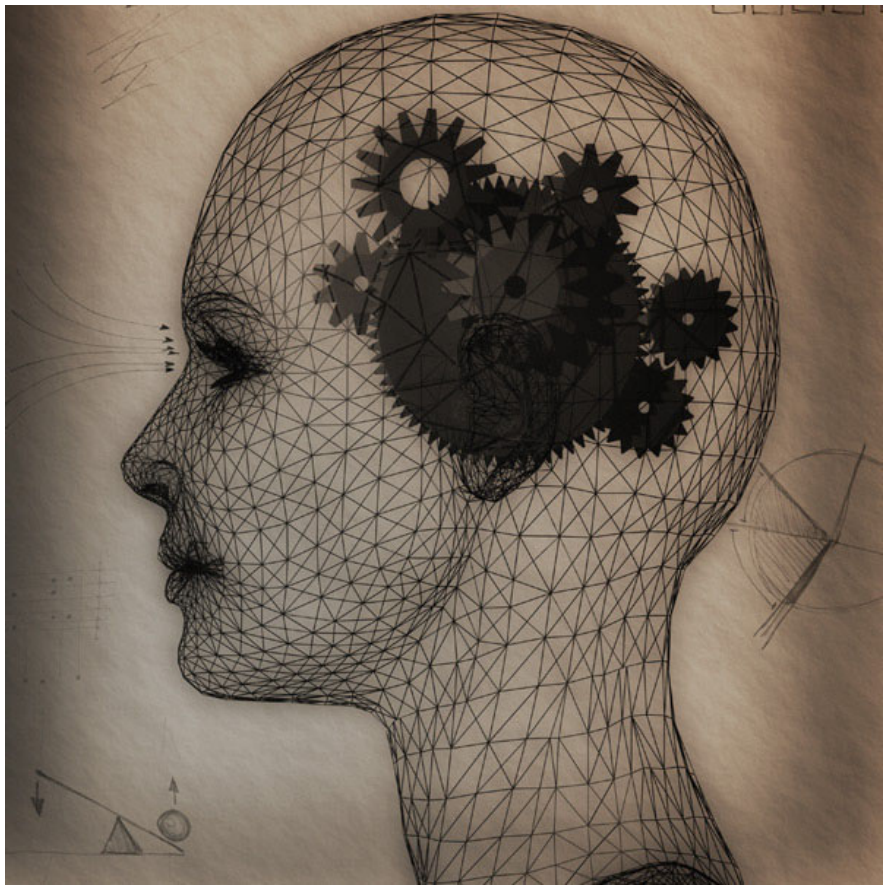
#1: Response Systems: Self-monitoring and retrieval practice

Your question
Think of a concept that your students have difficulty with. Write a re-call question that you could use audience response systems with. Example: What are the two types of evaluation I mentioned at the beginning of this talk: a. Authentic and Inauthentic b. Traditional versus Innovative c. Formative versus Summative d. Grading-based vs Enhanced-based

Evaluation-enhanced learning techniques

Tip: Learning is greatly enhanced through

effortful retrieval.



Evaluation-enhanced learning techniques

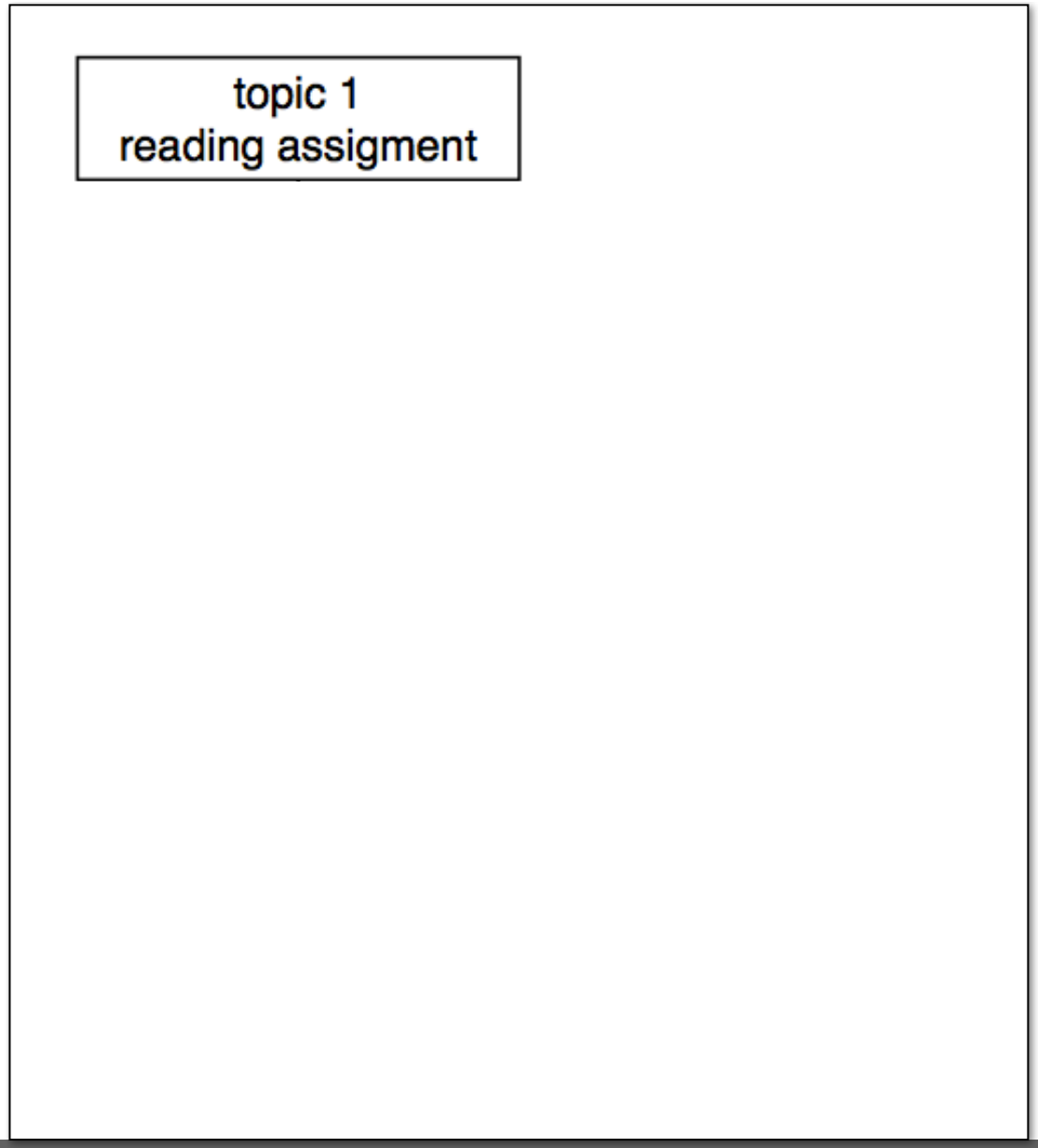
#2 Just-in-Time Teaching: Self-Monitoring and Effortful Retrieval

The majority of my students read before class.

1. Always
2 Sometimes
3. Never
4. I don't know

Evaluation-enhanced learning techniques

#2 Just-in-Time Teaching: Self-Monitoring and Effortful Retrieval



Evaluation-enhanced learning techniques

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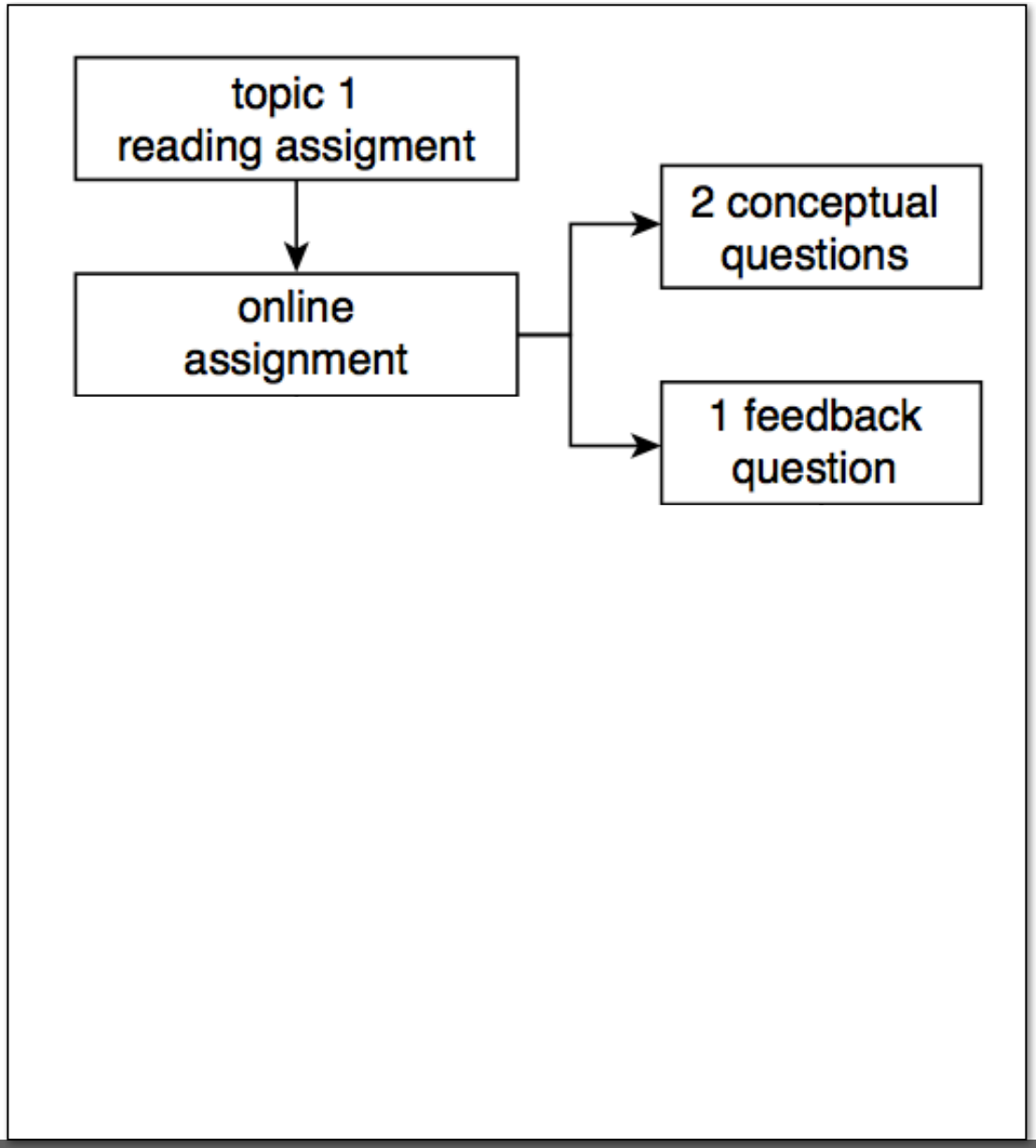

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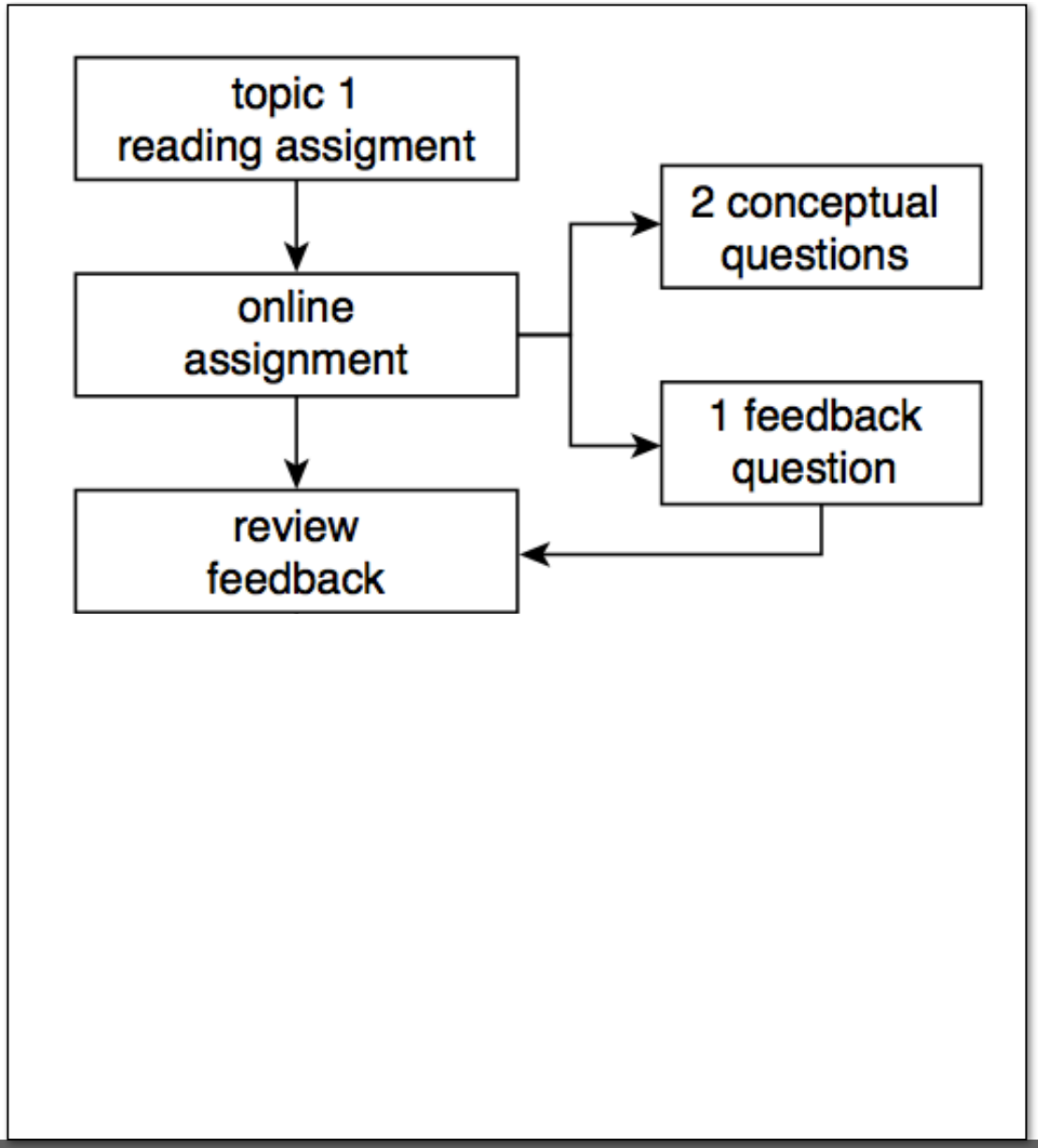

Evaluation-enhanced learning techniques

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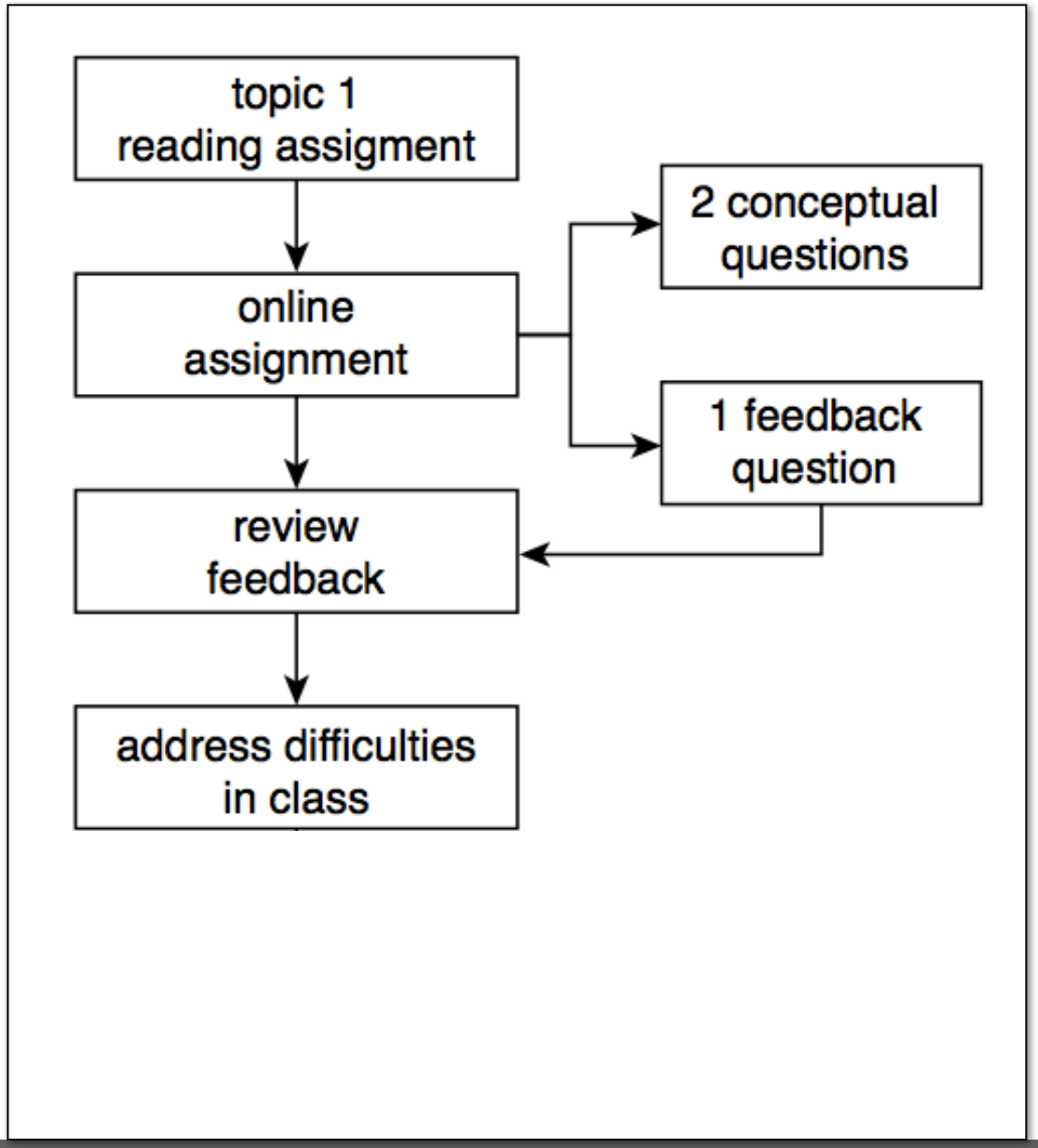

Evaluation-enhanced learning techniques

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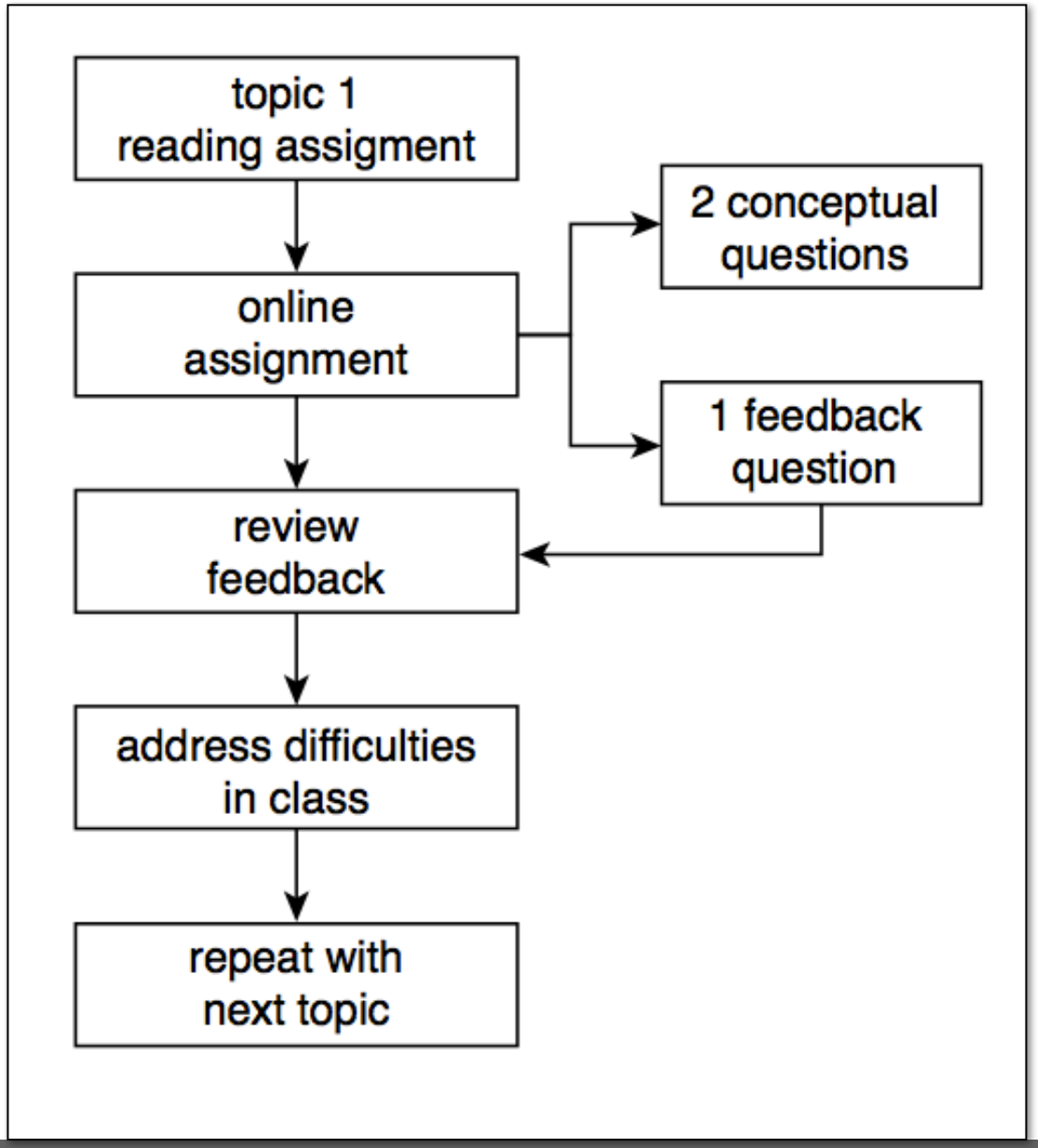


Evaluation-enhanced learning techniques

#2 Just-in-Time Teaching: Self-Monitoring and Effortful Retrieval

What is the most important thing you just learned about JiTT?

What did you find most confusing about JiTT?

*UbD, 2005

Evaluation-enhanced learning techniques

#3: One Minute Paper: Self-Monitoring and Effortful Retrieval

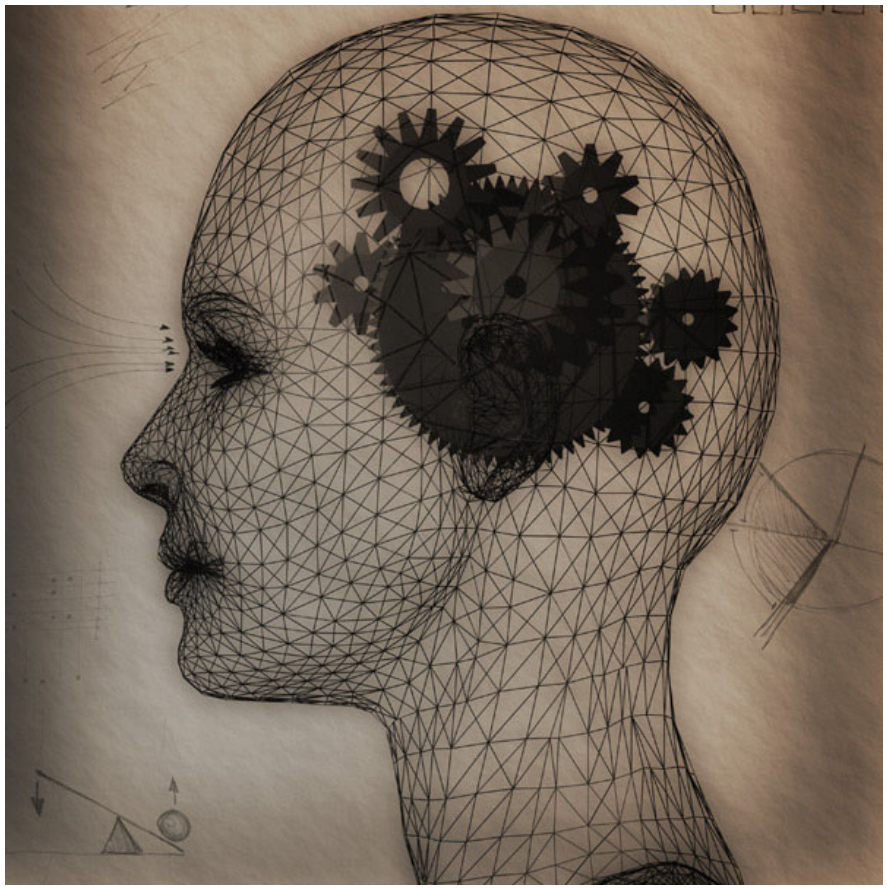
1. What is the most important thing you learned today?

2. What did you find most confusing or most difficult?

*UbD, 2005

Innovative evaluation techniques

Tip: The most effective learners are the most self-regulated.



*UbD, 2005

Innovative evaluation techniques

#4: Rubrics: The Road Maps to Self-Regulation

0 Incomplete	1 Novice	2 Developing	3 Competent	4 Expert

*UbD, 2005

Innovative evaluation techniques

#4: Rubrics: The Road Maps to Self-Regulation

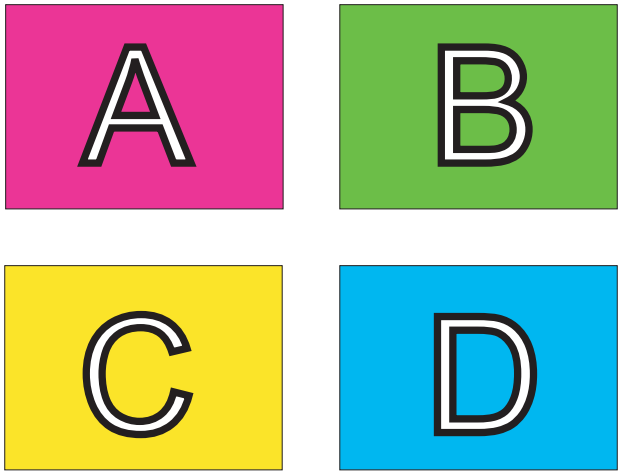
0 Incomplete	1 Novice	2 Developing	3 Competent	4 Expert
No question provided	Requires fact recall or “plug and chug” only	Primarily relies on fact recall, with some authentic measures of understanding	Evaluates students understanding by asking them to transfer knowledge to unfamiliar contexts	This question tests students understanding by asking them to transfer knowledge to new contexts AND to engage in other authentic tasks

Innovative evaluation techniques

#4: Rubrics: The Road Maps to Self-Regulation

0 Incomplete	1 Novice	2 Developing	3 Competent	4 Expert

4 powerful tools for evaluation-enhanced learning



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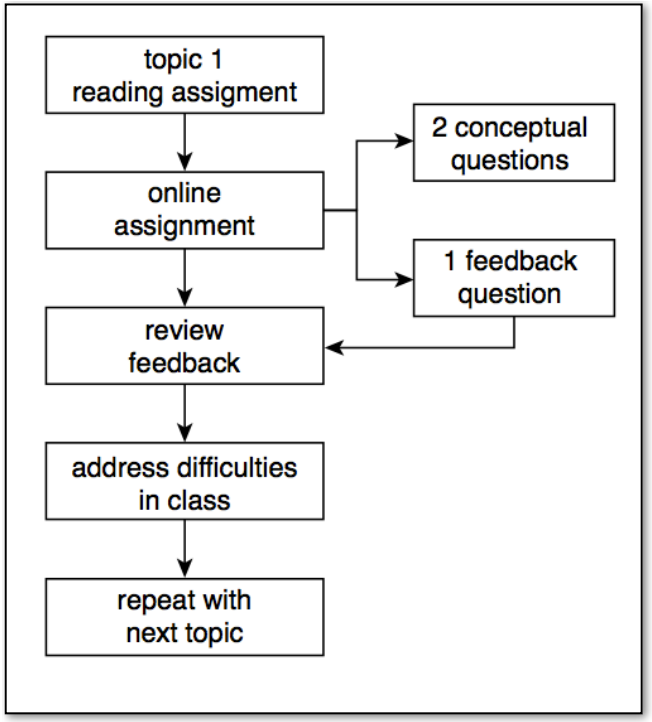

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3

0 Incomplete	1 Novice	2 Developing	3 Competent	4 Expert

4

Really want to improve your teaching?

Stop lecturing.

Start evaluating.

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