

Engaging students one-on-one, all at once

Online Session 2



Online Short Course, Part 2
The University of Pretoria in South Africa
September 9, 2010

Introduction

How important is it to you that your students complete their assignments?

Introduction

How important is it to you that your students complete their assignments?

- 1. very important**
- 2. somewhat important**
- 3. not very important**
- 4. not important at all**

Introduction

If you were to give your students a reading assignment before your next class, what fraction of your students would complete it?

Introduction

If you were to give your students a reading assignment before your next class, what fraction of your students would complete it?

- 1. (nearly) all of them**
- 2. about three quarters**
- 3. about half**
- 4. about one quarter**
- 5. not many**

Introduction

WHY?

Introduction

For this online lecture only 8 out of over twenty participants completed their assignment...

Introduction

For this online lecture only 8 out of over twenty participants completed their assignment...

Write down a few possible reasons for the low response rate.

Introduction

For this online lecture only 8 out of over twenty participants completed their assignment...

Write down a few things I could have done to MAKE you do it.

Outline



Outline

- **your questions**
- **effective questions & learning goals**
- **assessment strategies**

Your questions

There is a cultural preference in South Africa for collective thinking in group format. The risk is that group dynamics determine answers rather than individual logical reasoning. How can we deal with this issue?

Your questions

How can I get students to engage in innovative assessments when they will only participate in activities that are associated with marks?

Your questions

How well do PI and JiTT work in really large classrooms (300+ students)?

Your questions

According to the principles of Backward Design, when designing course-learning goals, the first step should be to consider established goals or “exit-level objectives” (what gains students will exit with at graduation) as defined by the institution, Faculty, and department.

Your questions

What are different methods of implementing JiTT and PI in stages (versus full implementation all at once)?

Your questions

Students can barely keep afloat with what we ask them to do in a traditional classroom, I am concerned adding more work will overwhelm them, can you address?

Your questions

We have students engaging in peer assessment of performance tasks (such as how another student handles a horse). How might I integrate principles of Peer Instruction to this activity?

Outline

- **your questions**
- **effective questions & learning goals**
- **assessment strategies**

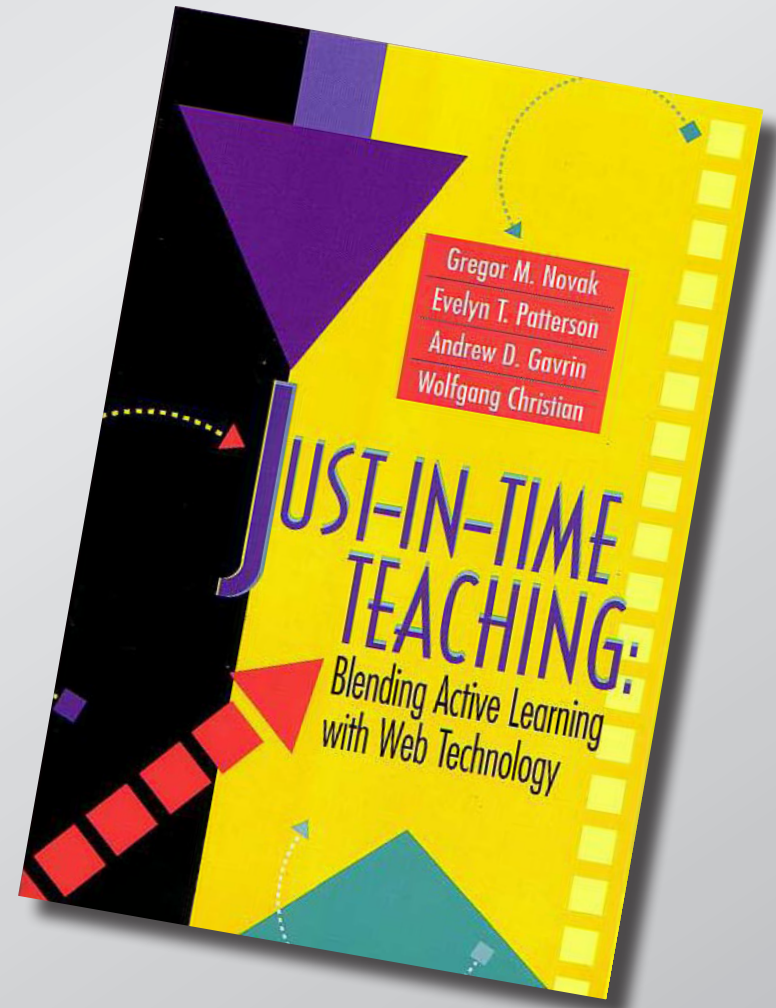
Effective questions & learning goals

you don't have to do all the work from scratch!

Effective questions & learning goals

Just-in-time-Teaching (JiTT)

www.jitt.org

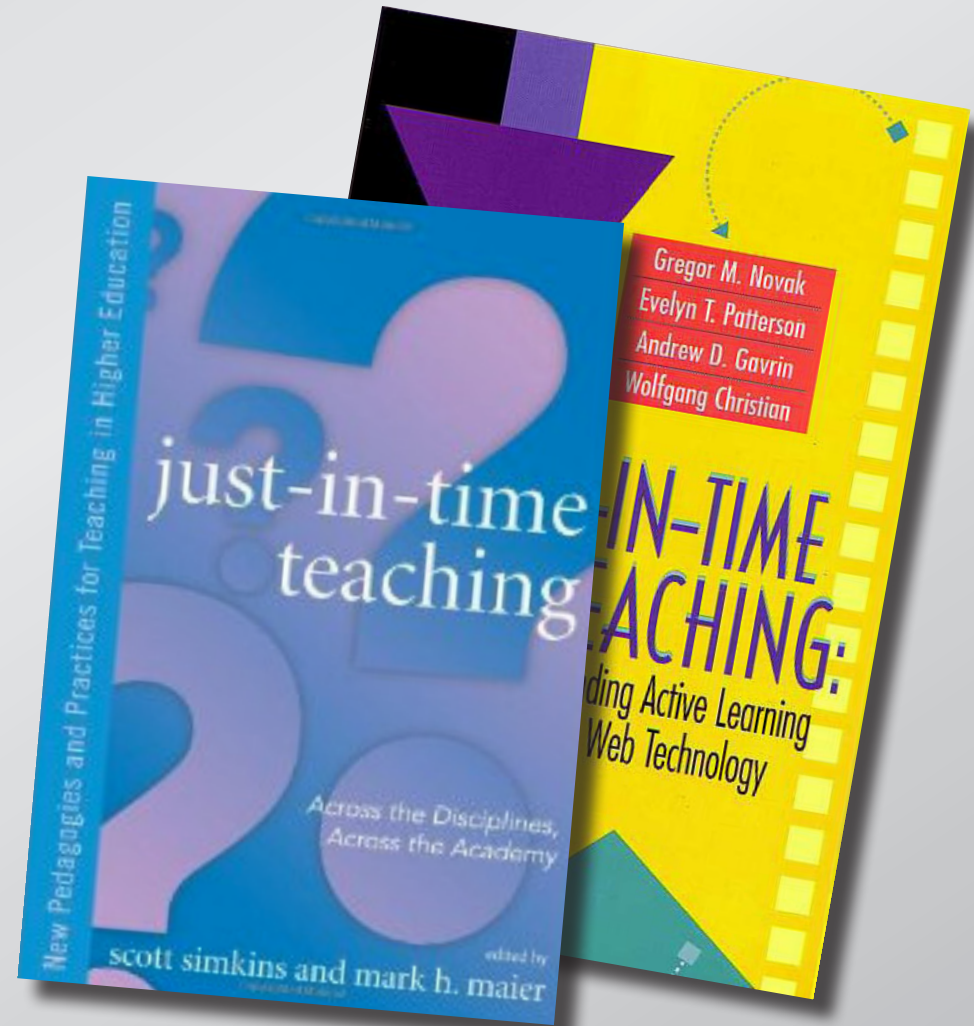


Effective questions & learning goals

Just-in-time-Teaching (JiTT)

www.jitt.org

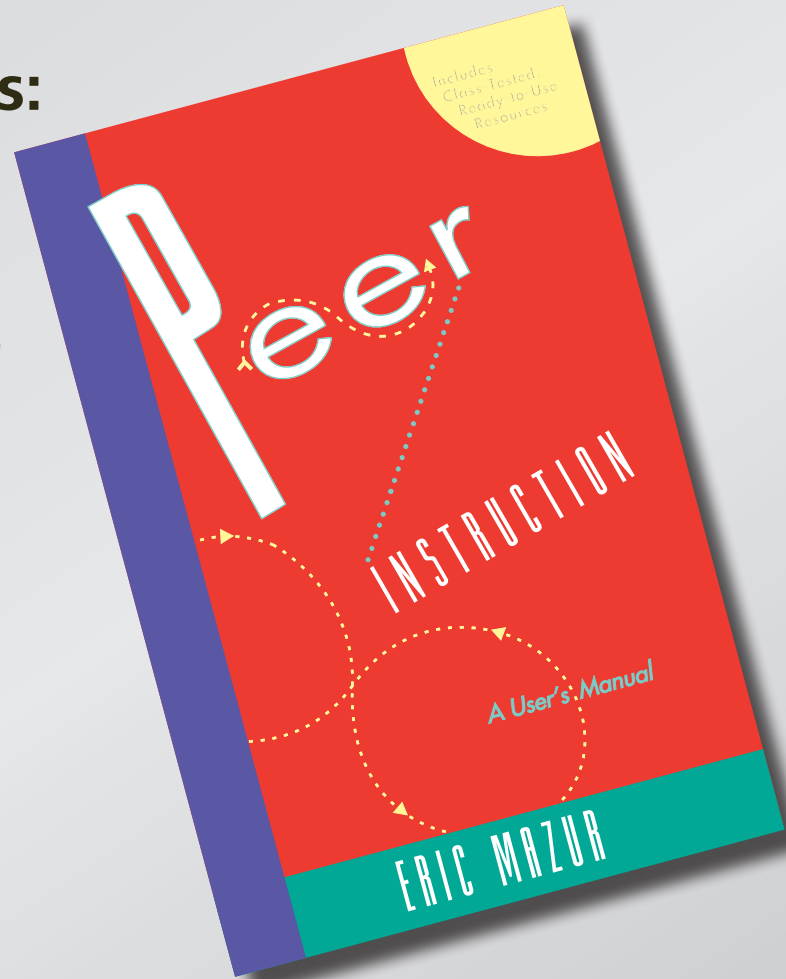
Simkins & Maier (2009)



Effective questions & learning goals

Books with ConcepTests:

- Physics (Prentice Hall)



Effective questions & learning goals

Books with ConcepTests:

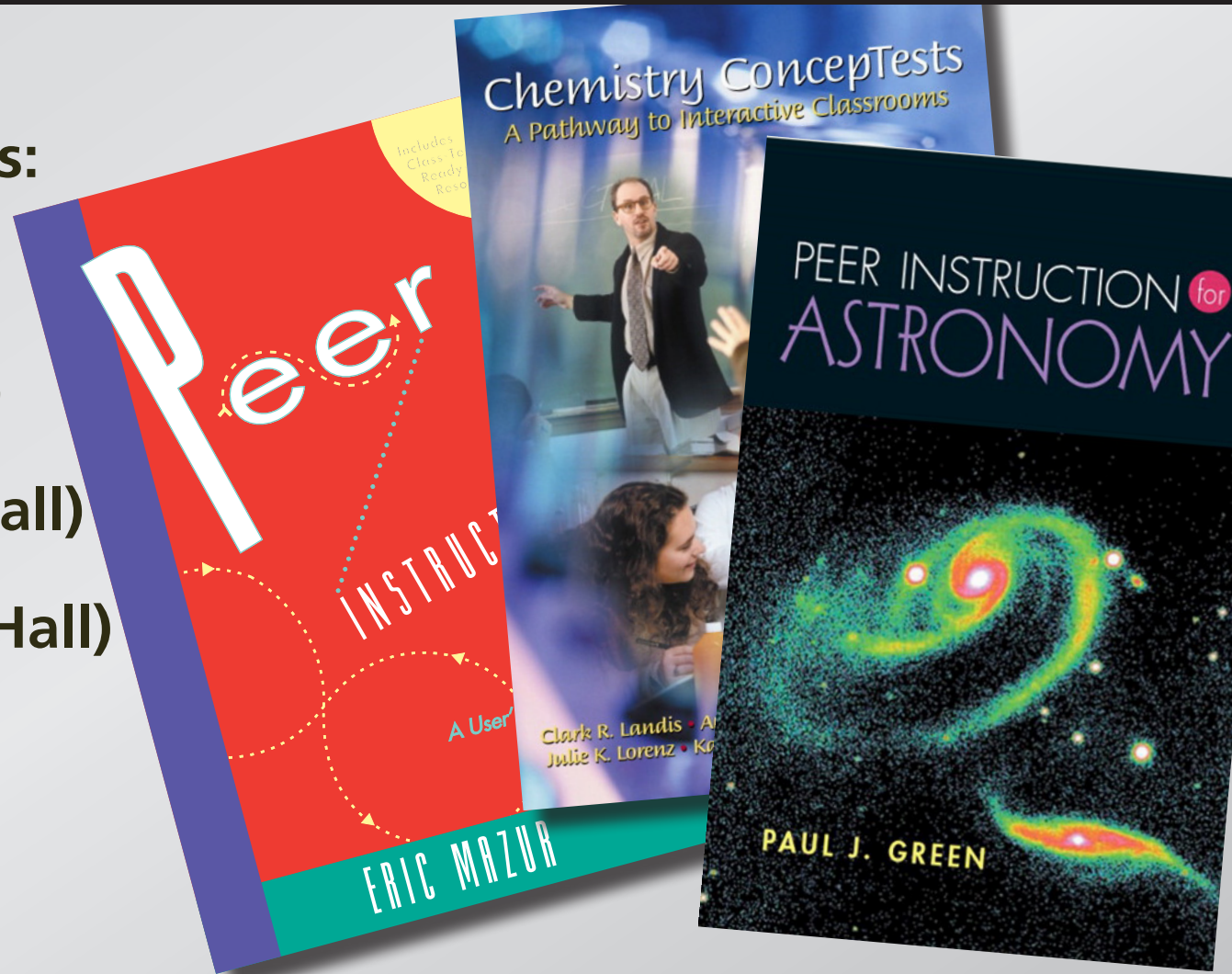
- Physics (Prentice Hall)
- Chemistry (Prentice Hall)



Effective questions & learning goals

Books with ConcepTests:

- Physics (Prentice Hall)
- Chemistry (Prentice Hall)
- Astronomy (Prentice Hall)



Effective questions & learning goals

Books with ConcepTests:

- Physics (Prentice Hall)
- Chemistry (Prentice Hall)
- Astronomy (Prentice Hall)
- Calculus (Wiley)



Effective questions & learning goals

and many more online resources...

Effective questions & learning goals

A good JiTT question...

- **relates to the reading assignment**
- **cannot be copied from the text**
- **tests a concept in the book in a new context**
- **lets students demonstrate familiarity with ideas in text**

Effective questions & learning goals

In online assignment for this session we asked you to design a learning goal using principles of Backward Design

Effective questions & learning goals

After successfully completing course, students will be able to...

- 1. design a path-finding route on how to search for specific business support services in South Africa.**
- 2. localize neurologic lesion in the horse**
- 3. understand Newton's Laws**
- 4. use empirical models to solve problems associated with heat flow, solute movement, and water flow in porous media**

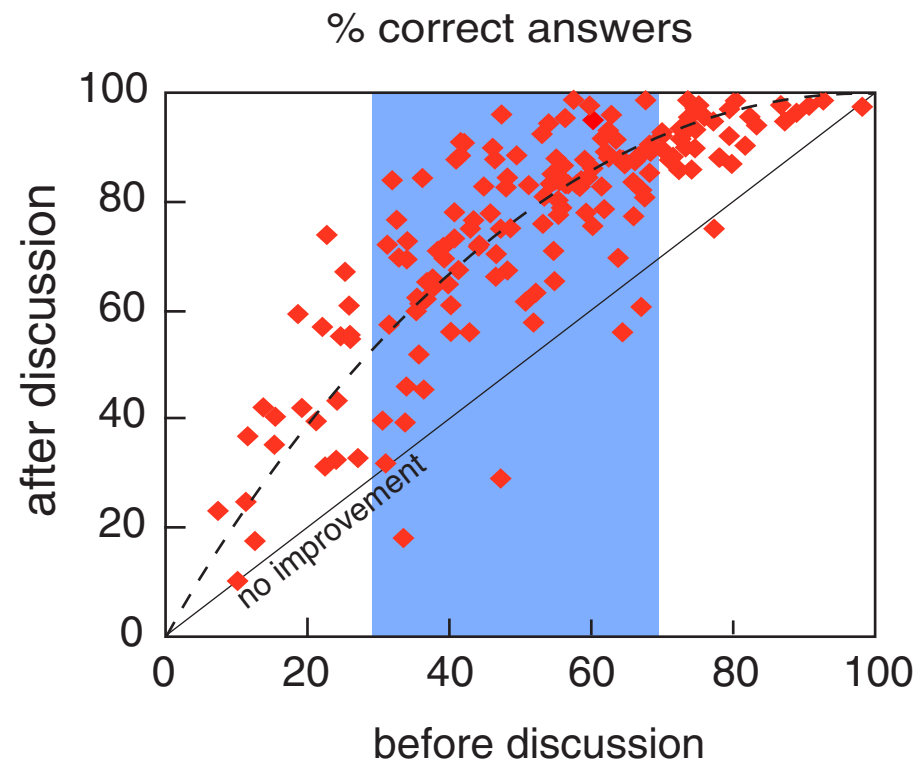
Effective questions & learning goals

A good ConcepTest...

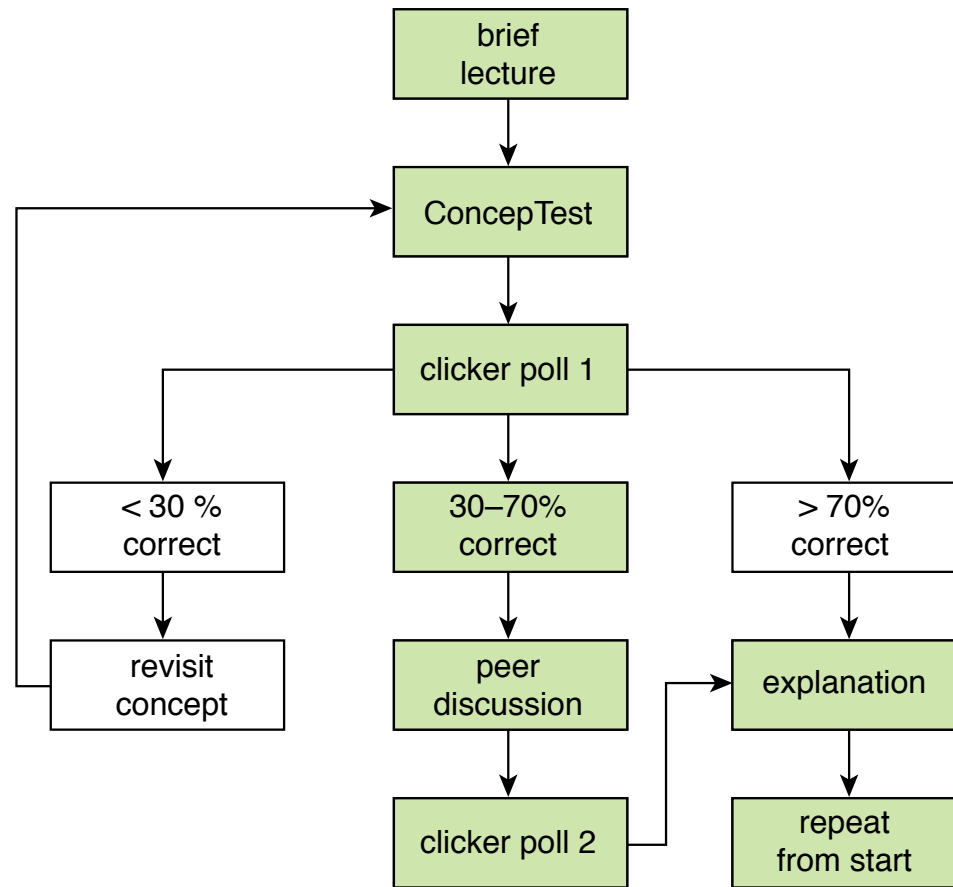
- helps develop mental models (or stimulate discussion)
- tests understanding, not memorization
- is just challenging enough (30–70% rule)
- has appropriate distractors

Effective questions & learning goals

ConcepTest data



Effective questions & learning goals



Effective questions & learning goals

How to move information transfer out of classroom?

Effective questions & learning goals

Imagine a rope that fits snugly along the equator.



Effective questions & learning goals

Imagine a rope that fits snugly along the equator.

Suppose the rope is cut and 1 m of rope is inserted between the cut ends. If the rope were to maintain a circular shape, how far off the surface of the Earth would it float?

1. the width of a few atoms
2. the width of a few hairs
3. the height of a curb
4. exactly 1 m
5. more than 1 m



Effective questions & learning goals

circumference at equator:

$$2\pi R_E$$

Effective questions & learning goals

circumference at equator:

$$2\pi R_E$$

new circumference:

$$2\pi R_E + 1 \text{ m}$$

Effective questions & learning goals

circumference at equator:

$$2\pi R_E$$

new circumference:

$$2\pi R_E + 1 \text{ m}$$

radius of circle with new circumference:

$$2\pi R = 2\pi R_E + 1 \text{ m}, \quad \text{and so} \quad R = R_E + \frac{1 \text{ m}}{2\pi}.$$

Effective questions & learning goals

The financial crisis that started in 2008 was brought to an end by:

1. stimulus packages
2. reduced spending by individuals
3. better regulation of financial institutions
4. a combination of measures
5. It hasn't ended yet

Effective questions & learning goals

a couple of points worth noting:

Effective questions & learning goals

a couple of points worth noting:

- 1. you got engaged**

Effective questions & learning goals

a couple of points worth noting:

1. you got engaged
2. no “correct” answer

Effective questions & learning goals

a couple of points worth noting:

1. you got engaged
2. no “correct” answer
3. you got engaged

Effective questions & learning goals

a couple of points worth noting:

1. you got engaged
2. no “correct” answer
3. you got engaged
4. you don’t need a correct answer!

Effective questions & learning goals

Which of the following airlines tries to save fuel by suggesting that its passengers use the bathroom before boarding?

1. Delta Airlines
2. Lufthansa
3. All Nippon Airways
4. British Midland Airways
5. Air France
6. JAL
7. Aboriginal Air Services
8. Aeroflot
9. Are you kidding me? None of the above.

Effective questions & learning goals

Which of the following airlines tries to save fuel by suggesting that its passengers use the bathroom before boarding?

1. Delta Airlines
2. Lufthansa
- 3. All Nippon Airways**
4. British Midland Airways
5. Air France
6. JAL
7. Aboriginal Air Services
8. Aeroflot
9. Are you kidding me? None of the above.

Effective questions & learning goals

hole in plate/circumference

model

financial crisis

discussion

airline

fact

Effective questions & learning goals

hole in plate/circumference

model

financial crisis

discussion

airline

fact

fact-recall not engaging

Outline

- **your questions**
- **effective questions & learning goals**
- **assessment strategies**

Assessment strategies

What are some of the traditional roles of assessment?

Assessment strategies

Traditional assessment...

- sets goals
- discriminates students by ability
- encourages students to study
- provides feedback

Assessment strategies

What should the role of assessment be?

Assessment strategies

What should the role of assessment be?

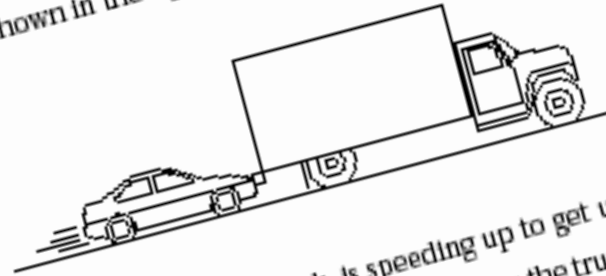
(inform us if we have accomplished our learning goals!)

Assessment strategies

Pre/post testing important for

- justifying approach
- improving implementation

Use the statement and figure below to answer the next two questions (15 and 16).
A large truck breaks down out on the road and receives a push back into town by a small compact car as shown in the figure below.



15. While the car, still pushing the truck, is speeding up to get up to cruising speed,
- ___ 1. the amount of force with which the car pushes on the truck is equal to that with which the truck pushes back on the car.
 - ___ 2. the amount of force with which the car pushes on the truck is smaller than that with which the truck pushes back on the car.
 - ___ 3. the amount of force with which the car pushes on the truck is greater than that with which the truck pushes back on the car.
 - ___ 4. the car's engine is running so the car pushes against the truck, but the truck's engine is not running so the truck cannot push back against the car. The truck is pushed forward simply because it is in the way of the car.
 - ___ 5. neither the car nor the truck exerts any force on the other. The truck is pushed forward simply because it is in the way of the car.
- ___ When the car reaches the constant cruising speed at which its driver wishes to push forward, the amount of force with which the car pushes on the truck is equal to that with which the truck pushes back on the car.
- ___ When the car reaches the constant cruising speed at which its driver wishes to push forward, the amount of force with which the car pushes on the truck is smaller than that with which the truck pushes back on the car.

Assessment strategies

Multi-dimensional, rubric-based assessment

Assessment strategies

Rubric-based evaluation

Presenter: _____

PRESENTATION RUBRIC

1 = needs improvement
does not meet expectations entirely

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

3 = admirable
exceeds expectations (no more than seven in this category!)

Category	1 = needs improvement	2 = satisfactory	3 = admirable
Nonverbal skills			
Posture/poise	Slouches or slumps a bit or looks somewhat nervous/insecure	Stands up straight, displays little or no tension	Stands up straight, looks relaxed, confident, and in control
Eye contact	Often looks away, at screen, at notes, or always looks at the same person or group of persons	Consistent use of direct eye contact with audience	Holds attention of entire audience with confidence
Vocal skills			
Gesticulation/body language and facial expression	Not used much or used ineffectively	Use of hand gestures and facial expressions appropriate to content	Use of hand gestures and facial expressions enhances content
Enthusiasm	Sometimes reflects lack of interest or negativity toward subject OR overdone	Often enthusiastic and engaged	Often enthusiastic and engaged
Volume	Sometimes too soft to be heard by all audience members	Volume appropriate to audience	Volume appropriate to audience
Pitch/inflection	Pitch was not used to maintain interest or convey emotion OR was used inappropriately	Often uses pitch and inflection to maintain interest and convey emotion	Often uses pitch and inflection to maintain interest and convey emotion
Vocabulary	Unexplained terms/jargon used	Uses appropriate vocabulary	Uses appropriate vocabulary
Clarity of speech	Occasionally mumbles or can not be understood or mispronounces words	Speech is clear and easy to understand	Speech is clear and easy to understand
Pauses	Pauses not intentionally used or used inappropriately	Pauses used effectively to emphasize points	Pauses used effectively to emphasize points
Articulation	Articulation is unclear	Articulation is clear	Articulation is clear
Fluency	Fluency is poor	Fluency is good	Fluency is good
Organization	Organization is poor	Organization is good	Organization is good
Content	Content is poor	Content is good	Content is good
Delivery	Delivery is poor	Delivery is good	Delivery is good

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)

Category	1 = needs improvement	2 = satisfactory	3 = admirable
Structure			
Title	Wordy, long, unimaginative, or inappropriate title	Title appropriate for audience	Catchy title drawing reader into article
Opening	Missing a "hook" or a lead in the first paragraph AND does not orient reader to paragraphs	Hook or lead present OR first few paragraphs orient reader to subject	Hook or lead present OR first few paragraphs orient reader to subject
Paragraph length	Many paragraphs are long (6 or more sentences)	Some paragraphs are long (6 or more sentences), most are short (1-5 sentences)	All paragraphs are short (1-5 sentences)
Organization	Lacks organization; doesn't follow story; paragraph transitions missing	Sticks to story, paragraphs linked	Organization is compelling
Closing	Does not end compellingly or with an important message	Does not end compellingly or with an important message	Ends compellingly with an important message
Scientific facts	Contains incorrect, misstated, irrelevant, or unnecessary facts	All facts are 100% correct, relevant, and necessary	All facts are 100% correct, relevant, and necessary
Supporting sources	Does not back up facts with proper or convincing sources or evidence	All facts backed up with proper or convincing sources or evidence	All facts backed up with proper or convincing sources or evidence
Originality	Lacks originality	Some originality apparent	Some originality apparent

Assessment strategies

Standards for effective oral presentation

- Vocal skills
- Verbal skills
- Content
- Visuals
- Discussion management



Assessment strategies

Standards for effective writing

- Structure
- Content and ideas
- Mechanics



Assessment strategies

Standards for discussion participation

no questions

irrelevant question

clarification or comment

trigger for group discussion

Score 1-0

1

2

3

3 = admirable
exceeds expectations
(no more than seven in this category)

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

1 = needs improvement
does not meet expectations entirely

WRITING RUBRIC

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

1 = needs improvement
does not meet expectations entirely

3 = admirable
exceeds expectations
(rarely selected)

Presenter:

Vocal skills

Gesticulation/body language and facial expression

Enthusiasm

Volume

Pitch/inflection

Vocabulary

Clarity of speech

Posture/poise
Slouches or slumps a bit or is somewhat nervous/insecure

Eye contact
Does not look at the audience or looks away, at screen, at notes, or at the same person or group of people

Enthusiasm
Sometimes reflects lack of interest or negativity toward subject OR not genuine or overdone

Volume
Sometimes too soft to be heard by all audience members

Pitch/inflection
Pitch was not used to maintain interest or convey emotion OR was used inappropriately

Vocabulary
Unexplained terms/jargon used

Clarity of speech
Occasionally mumbles or can not be understood or mispronounces words

Clarity of speech
Pauses not intentionally used or pauses used

Structure
Does not stand up straight, displays little or no eye contact with audience

Structure

Title

Opening

Paragraph length

Organization

Closing

Scientific facts

3 = admirable
exceeds expectations
(no more than seven in this category)

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

1 = needs improvement
does not meet expectations entirely

Score 1-0

1

2

3

Wordy, long, unimaginative, or inappropriate title

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

Many paragraphs are long (6 or more sentences)

Lacks organization; doesn't follow story; paragraph transitions missing

Does not end compellingly or with an

Contains incorrect, misstated, irrelevant, or unnecessary facts

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

Title appropriate for audience

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)

Sticks to story, paragraphs linked

Does not end compellingly or with an

All facts are 100% correct, relevant, and necessary

All facts backed up with proper or convincing sources or evidence

Some originality apparent

Catchy title drawing article

Hook or lead present paragraphs orient

All paragraphs a sentences)

Organization compelling

Ends comp

Includ

Origin

the

Assessment strategies

Calibrated Peer Review

- review rubric
- research and write article
- upload article
- score 3 calibrated articles
- score articles of 3 peers (anonymous)
- score own article
- review compound score

Assessment strategies

Variation: assess students' ability to assess

Research Funding:

Pew Charitable Trust, Pearson/Prentice Hall, Davis Foundation, Engineering Information Foundation, Derek Bok Center for Teaching and Learning, National Science Foundation

for more information and a copy of this presentation:

<http://mazur-www.harvard.edu>

Follow me!



eric_mazur