

Evaluating Learning in the Classroom



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Learning Objectives

Participants will be able to:

- describe methods of formative assessment in the classroom
- explain how to make time for classroom assessment
- describe student reactions to non-traditional teaching
- describe the beliefs and behaviors needed for faculty to implement classroom assessment successfully

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Why should we change the way we teach?

Is teaching now any different than it has always been?

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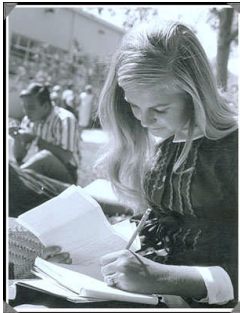
What's different . . .

- Technology
 - Individual
 - Classroom
- Exponential growth of knowledge
- Understanding of how people learn
 - Constructivism

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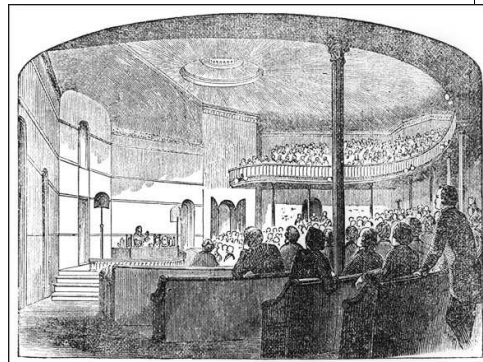
Students then and now



1960s



2000s



Smithsonian lecture hall c. 1856

www.si.edu/archives/



“Teachers should be controlled so that they have to shut up for a minute and question students and make them explain. They don’t even know students aren’t learning, and students don’t know they aren’t learning.

The classroom should be where students learn what they don’t know.

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• Lecture



• Interactive Class
(collaborative learning)



• Independent student learner

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Impediment 1 – The faculty

If I take class time to do assessment, I can’t cover enough content.

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But how to cut out content???

Let the students learn the basics on their own.

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TRADITIONAL CLASS

Students take notes on content in lecture



Students go home to study and work problems.

INTERACTIVE CLASS

Students learn content at home before class



Class time is used to work problems and informally assess understanding

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Designing an Interactive Class

1. Develop clear measurable objectives: skills as well as content.
2. Identify essential content. Focus on concepts, not details.
3. Decide what students can learn on their own. “Teach yourself the basics.”
4. Use class time for mini-lectures, practice, and ungraded assessment.

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Collaboration during class



Techniques for Formative Assessment

- Collaborative or cooperative learning
- Questioning
- Think-pair-share
- Minute papers (what's still confusing?)
- Mapping
- Case studies
- Problem-based learning

Remember your objectives!

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Classroom Strategies

- Bloom's taxonomy (revised)
 - Remember / understand
 - Apply / analyze / evaluate
- Uncovering student misconceptions
- "On the fly" – instant assessment
- Opinion/feedback questions
 - Find out what students are thinking
 - Introduce humor

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Response systems give instant feedback



Test for conceptual understanding, not memorization

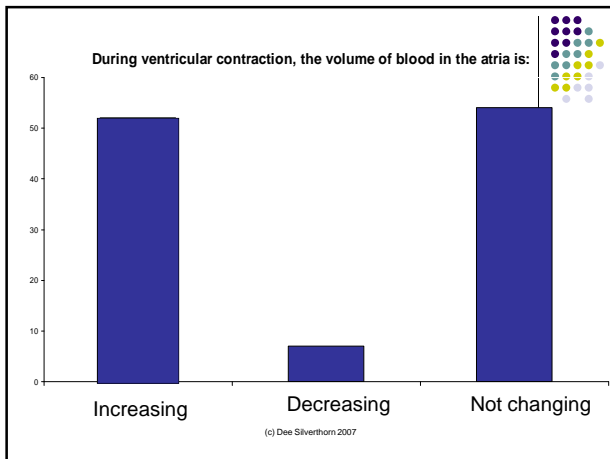
Example: The cardiac cycle

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During ventricular contraction, the volume of blood in the atria is:

- A) increasing
- B) decreasing
- C) not changing

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Designing an Interactive Class

5. Graded assessment matches class activities.

- Points for coming to class
- If necessary, graded quizzes on reading
- Tests assess knowledge and skills learned in class

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Outcomes

- Better understanding and retention of content
- Better problem-solving skills
- Students learn to be cooperative instead of competitive
- Students become aware how they learn

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Student reaction to the interactive class

1. Denial and disbelief
"I've heard this before."
2. Shock or panic
"She really means it! I can't believe this is happening!"

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Student reaction

3. Anger, frustration, resistance

"Why won't you tell me what I need to know?"

"Just do your job and lecture!"

"Class time is worthless."

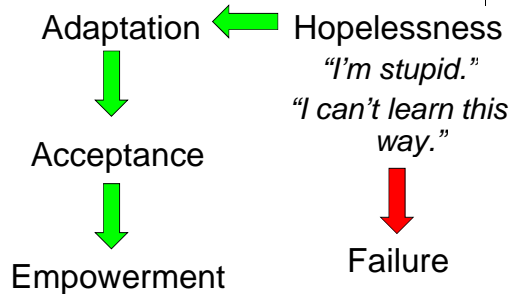
"This is not my style."

What they're saying is . . .

"You've changed the rules!"

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Student reaction to the interactive class



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What helps students adapt?

1. Explain what you're doing and why.
 - Give them Bloom's taxonomy
2. Repeat at intervals.
3. Explain the adaptation process.
 - Frustration is OK – it's part of the process.

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Student reactions 1 year later

"This has been a wake-up call. I know now that I need to do more than memorize."

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"Now I know learning is not just sitting with a book and writing notes. Now I always ask myself, 'Do I know this?', 'How well do I know this?', 'If I see this in a different format, will I recognize it and still know it?' I've never talked to myself this much before."

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Can all faculty be successful in an interactive classroom?

- Can we predict who will have trouble making the transition?
- What can we do to help faculty be successful?

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Barriers to implementation

- Faculty beliefs and attitudes
- Student resistance and anger
- Administration/peers not supportive

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Successful faculty believe:

- Instructor is facilitator, role model.
- Students are capable of independent learning.
- People can learn using different strategies.
- Learning = concepts, principles, and application of knowledge.
- The classroom is where students learn what they don't know.
- Assessment challenges students.

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Tips for success

1. Define your goals/objectives.
2. Start small.
3. Enlist the students.
4. Give students tools to succeed.
5. Match assessment to method.
6. Have patience, flexibility, sense of humor
7. Get administrative & peer support

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Successful faculty constantly reflect on teaching and learning.



Questions, comments, and discussion

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REFERENCES

- Silverthorn D. U. (2006) Teaching and Learning in the Interactive Classroom. *Adv Physiol Educ* 30(4): 135-140.
- Silverthorn D.U., Thorn P.M., and Svinicki M.D. (2006) It's Difficult to Change the Way We Teach: Lessons from the Integrative Themes in Physiology (ITIP) Curriculum Module Project. *Adv Physiol Educ* 30(4): 204-214.

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