

Dr. Stephen L. Chew
Department of Psychology
Samford University
slchew@samford.edu
Twitter: @SChewPsych

Enhancing and Assessing Student Learning
Radford University nhvnmvc666
August 22, 2016

Beliefs about Learning that Make You Stupid

- Learning is fast
- Being good at a subject is a matter of inborn talent rather than hard work,
- Knowledge is composed of isolated facts
- I'm really good at multi-tasking, especially during class or studying

Metacognition

- A student's awareness of their level of understanding of a topic
- Metacognition distinguishes between stronger and weaker students
- One of the major tasks for a freshman is developing good metacognition
 - In high school, they spent years developing a metacognitive sense that is likely inadequate or even counterproductive for college.

Which of the following is the MOST important ingredient for successful learning?

1. The intention and desire to learn
2. Paying close attention to the material as you study
3. Learning in a way that matches your personal Learning Style?
4. The time you spend studying
5. What you think about while studying

Achieving Deeper Processing

As you study, follow these principles:

- **Elaboration:** How does this concept relate to other concepts? Can I make it a story?
- **Distinctiveness:** How is this concept different from other concepts?
- **Personal:** How can I relate this to my own personal experience?
- **Appropriate to Retrieval and Application:** How am I expected to use or apply this?

Effective Assessment

- Assessment makes learning visible so that it can be measured
 - Provides evidence of student learning
 - Provides feedback on student learning for both faculty and student
 - Quantitative or qualitative
- Ideally, assessment results can be used to improve teacher pedagogy and student learning

Summative Assessments

- Formal, comprehensive assessment of knowledge used for evaluation and consequential judgments about student achievement

Formative Assessments

- Brief, low stakes assessments that give students (and teachers) feedback BEFORE exams/high stake grades

Angelo, T. A. and K. P. Cross (1993). *Classroom Assessment Techniques: A Handbook for College Teachers*, Jossey-Bass.

Goals of Formative Assessments

- Improve metacognition for students and teachers
- Address tenacious student misconceptions
- Illustrate desired level of understanding of knowledge for students
- Increase long-term student learning and understanding
 - Practice and deep processing
- Promote rapport and trust
- Model thinking for understanding

Properties of Conceptests (Mazur, 1997)

A multiple choice question that...

- Focuses on a single concept
- Requires conceptual understanding to solve
- Has adequate response alternatives
 - Ideally the incorrect alternatives should reflect the most common misconceptions
- Be unambiguously worded
- Be neither too easy nor too difficult

The ConcepTest General Format

1. Present ConcepTest to class – 1 minute
2. Students given time to think – 1 minute
3. On a given signal, students indicate their answer by number of fingers.
4. Have the students pick someone around them, preferably with a different answer, to discuss their choices – 1- 2 minutes
5. Repeat step three to see how choices have changed
6. Explain and discuss the answer as a class – 2+ minutes

Concept Maps

A concept map is a graphical, node-link network representation of knowledge structures.

- Nodes represent concepts
- Links represent relationships such as category membership, relatedness, or distinctiveness.

Question Generation

Provide us with three (3) questions that you would like answered concerning the topics covered in your textbook readings or in lecture. These can be any questions you might have, as long as the questions are about the material or are stimulated by the material. They can be questions about concepts you are still unclear about, further information you would like to have, or questions about how some issue applies to your own life or to other courses.

- Why, How, and What if questions

Assessment for Accreditation

- Standardized, external assessments allow cross school comparisons, but they often do not indicate how to improve pedagogy
- Authentic or embedded assessments are assignments you would normally give
 - To assess writing skills, use a paper assignment for that purpose as well as a course grade
 - Locally valid

Less Laborious Local Assessment Methods

- Probe for understanding
- Common problem or question set (across years or class sections)
- Common class problem (across years or class sections)
- Common assignment and rubric (across years or class sections)

About Assessment

- Assessment need not be burdensome for faculty or students
- Many regular routine activities can be adapted for assessment
- It can be used to assess and improve pedagogy
- It can improve student learning

Other Formative Assessment Methods

Think Pair Share

- Create a question that requires conceptual understanding or application of a concept, preferably one which also encompasses a common misconception.
- Think: Present the question and have students think of their answer
- Pair: Have students pair up and discuss their answers and reasoning
- Share: Discuss as a class

For example:

Which of the following does *NOT* represent studying at a deep level?

1. As I read, I relate the information to what I already know.
 2. As I read, I relate the information to my own personal experience
 3. As I read, I think of the key distinctions between this concept and other concepts I've learned about.
 4. As I read, I repeat the information to myself multiple times.
 5. I often close the book and my notes and just try to write out all the information I can remember on my own.
- Directed paraphrasing
 - Students paraphrase concepts for a specific audience
 - Letter to Mom and Dad
 - Application cards

- Students generate real-world applications for principles, theories, or concepts
- **Headline Writing**
 - Students write a headline for a reading or activity. Second, the student writes a paragraph explaining the headline.
- **Minute Papers**
 - What was the most important thing you learned during this class?
 - What important question remains unanswered?
 - What concept is most difficult for you to understand?
 - Encourages students to think about what they DON'T know
- **Exit Problems**
 - Toward the end of class, assign a problem to be solved before leaving class.
- **Error Excavation**
 - After an exam, work through a common error in detail in class
 - Conduct an activity to reinforce the learning
 - Assess for improved learning
- **Exam Wrappers**
 - Exam Wrappers are an After Exam Review or Exam Debriefing activity completed by students after exams have been returned to them which makes them reflect on their level of preparation and understanding.

Resources

Video Series: How to Get the Most Out of Studying

www.samford.edu/how-to-study

Introductory Video: Developing a Mindset for Successful Learning

Video 1: Beliefs That Make You Fail...Or Succeed

Video 2: What Students Should Understand About How People Learn

Video 3: Cognitive Principles for Optimizing Learning

Video 4: Putting the Principles for Optimizing Learning into Practice

Video 5: I Blew the Exam, Now What?

Video Series: The Cognitive Principles of Effective Teaching

<https://www.samford.edu/employee/faculty/cognitive-principles-of-effective-teaching/> or

<http://bit.ly/1LDovLp>

Video 1: Beliefs about Teaching

Video 2: The Cognitive Challenges of Teaching: Mindset, Metacognition, and Trust

Video 3: The Cognitive Challenges of Teaching: Prior Knowledge, Misconceptions, Ineffective Learning Strategies, and Transfer

Video 4: The Cognitive Challenges of Teaching: Constraints of Selective Attention, Mental Effort, and Working Memory

Video 5: Teachable Moments, Formative Assessment, and Conceptual Change

Dropbox Public Folder Guide

- 1) Videos on How to Get the Most out of Studying: www.samford.edu/how-to-study
- 2) Think-Pair-Share items for the How to Study Videos:
<https://dl.dropboxusercontent.com/u/22761776/TPS%20Activities%20for%20study%20videos.docx> or <http://bit.ly/LM2kaw>
- 3) Exam Debriefing Activity (“Exam Wrapper”) using the Study Videos:
<https://dl.dropboxusercontent.com/u/22761776/Exam%20Debrief%20Activity.docx> or <http://bit.ly/LM2sXn>
- 4) Guide to the levels of processing demonstration I do, including response sheets:
<https://dl.dropboxusercontent.com/u/22761776/Orienting%20Task%20Demonstration%20with%20Instructions%20and%20Guide.pdf> or <http://bit.ly/1aKaWuc>
- 5) Multitasking in-class activity showing the cost of multitasking:
<https://dl.dropboxusercontent.com/u/22761776/Multitasking%20in-class%20activity.docx> or <http://bit.ly/1o73MDS>
- 6) Brief article describing the use and design of ConcepTests from the Psychology Teacher Network:
<https://dl.dropboxusercontent.com/u/22761776/Intro%20to%20Conceptests.ptn.doc> or <http://bit.ly/1dzKtKK>

Video on Learning Styles

Learning Styles & the Importance of Critical Self-Reflection by Tesia Marshik for TEDxUWLaCrosse
<http://tedxtalks.ted.com/video/Learning-Styles-the-Importance>

For Further Reading

Books on cognitive research applied to teaching:

Applying Science of Learning in Education: Infusing Psychological Science into the Curriculum (2014). A free e-book written by some of the best researchers in learning sciences:
<http://teachpsych.org/ebooks/asle2014/index.php> or <http://bit.ly/KbYlTG>

Ambrose, S. A., Bridges, M. W., DiPietro, M., Lovett, M. C., Norman M. K. (2010). *How Learning Works: Seven Research-Based Principles for Smart Teaching*. San Francisco, CA: Jossey-Bass

Brown, Roediger, & McDaniel (2014). *Make It Stick: The Science of Successful Learning*. Belknap Press.

Cox R. D. (2011). *The College Fear Factor: How Students and Professors Misunderstand One Another*. Harvard University Press.
Miscommunication and conflicting expectations between teacher and student can undermine instruction even when both the student and teacher are motivated to succeed.

Elena Silva and Taylor White (2013). *Pathways to improvement: Using psychological strategies to help college students master developmental math*. Carnegie Foundation for the Advancement of Teaching.

http://www.carnegiefoundation.org/sites/default/files/pathways_to_improvement.pdf An excellent summary of mental mindset as it applies to productive persistence. Although focused on math, the general principles discussed apply to all areas.

Books on Formative Assessment:

Angelo & Cross (1993). *Classroom Assessment Techniques*. Jossey-Bass.

Ritchart, Church, & Morsion (2011). *Making Thinking Visible: How to Promote Engagement, Understanding, and Independence for All Learners*. Jossey-Bass.

Barkley & Major (2016). *Learning Assessment Techniques: A Handbook for College Faculty*, Jossey-Bass.

Walvoord B. E. (2010). *Assessment Clear and Simple: A Practical Guide for Institutions, Departments, and General Education* 2nd Ed., Jossey-Bass.

Suskie, L. (2009). *Assessing Student Learning: A Common Sense Guide* 2nd Ed. Jossey-Bass.

Blogs and Twitter Feeds

- Daniel Willingham: <http://www.danielwillingham.com/>
- Annie Murphy Paul: <http://anniemurphypaul.com/>
- Learning Scientists Blog: <http://www.learningscientists.org/ourteam/>

A Test of Critical Thinking

