Checking for Understanding

-Any questions? - Did you all get that? -Everybody understand?
-Does that make sense? - Right? - Does everyone see that?

Are these questions really the best way to check for understanding?

If no one says anything, how do you know if the students
- get it?
- are too confused to even formulate a question?
- think they get it – but really don't?
- are too embarrassed to reveal their ignorance in front of everyone?

Research has shown that even at the college level, students aren't always self-regulated learners, which means they may not always be aware of what they do or don't understand. They sometimes *think* they get it, but really they don't – or they only have a superficial understanding. (Hofer, Yu, & Pintrich, 1998). After all, how often have you heard students say, "I thought I knew the material really well, but I bombed the exam."

How can you REALLY check to see if students understand a particular concept, term, or idea in the way that you intended?

There are things you can do before and during section to check for understanding

Before Section (AKA "Planning")
While planning your section, it is extremely important to think about *what* students should understand and at *what level*. (If you aren't sure, you might even want to clarify this with the professor.)

For example, should students be able to
- memorize a definition or formula?
- apply the information to novel situations?
- use the information to create something?
- critique, evaluate, compare and contrast theories?

Your goals should influence what types of assessments you use *(For example: If you want to check that students know when to apply the Pythagorean Theorem, asking them to just recite back the formula won't tell you much.)*

Yes, time is often tight during section, but if you want to make sure that students are getting meaningful understanding about the topic, you also need to plan time for these assessments.

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During Section

You might want to check for understanding after making a key point and before moving on to the next topic.

Here are a couple of suggestions for how you can do this:

1) Ask the students to explain terms, concepts in their own words

"Okay, now write down, in your own words, what inductive reasoning means." Then ask students to share their definitions. You can reinforce the key points included in their definitions, point out any key points they missed, and clarify confusing parts.

2) Present students with a real world scenario and ask them to identify the relevant term(s) or concept(s)

"Participants in an experiment are given either 50mg of caffeine or 100mg of caffeine. Then they are given a memory test. The number of correctly recalled words is recorded. What is the independent variable and what is the dependent variable?

3) Ask students to compare and contrast theories, terms, or concepts

"In your own words, describe some similarities and differences between communism and capitalism." (If possible, jot down their comments on the board)

4) Ask students to analyze a piece of work (e.g. essay, painting, research interpretation) in order to determine point of view

Present students with a passage from the civil war period and have the students determine whether the passage was written by a northerner or a southerner based on mentioned events, opinions, etc.

It's Important to vary the methods in how you have students respond.

(So that you are checking with as many students as possible, not just the one or two who tend to speak up)

1) Choral response: Students are asked to respond as a group

Pro: It's quick

Con: May just hear from the one or two who feel comfortable speaking up

2) Students are asked to write down an answer before raising their hands

Pro: Gives all students a chance to think of a response

Con: Takes more time

3) Students are chosen by the TA to respond

Pro: Allows TA to determine if particular students, even shy or quiet ones, understand

Con: May embarrass chosen students

4) Have students signal with gestures (e.g. thumbs up/thumbs down) whether or not they understand

Pro: Allows TA to quickly determine who understands and who doesn't

Con: Students may think they understand but they may not

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Some Examples of Relevant Research

1) Checking for understanding is an important step in the learning process. The prior knowledge that people bring into the learning situation influences how they interpret the material you are presenting. Therefore, it's sometimes hard to know exactly what students are getting out of the lesson – unless you purposely check for understanding. Research has shown that an important part of the learning process is identifying and confronting misconceptions that can interfere with learning. For example, in a study by Vosniadou, Ioannides, Dimitrakopoulou, and Papademetriou (2001) two groups of students were given a brief physics lesson. With one group of students, experimenters checked for understanding before moving on to the next part of the lesson by presenting students with a brief scenario and asking them to predict and explain the outcome. The other group listened to the same lesson, but without a pause to check for understanding. Results showed that the "checked for understanding" group had a significantly greater pretest-to-posttest gain on tests of conceptual understanding.

2) Checking for understanding models good study skills; it makes students more aware of how to monitor their own understanding. In a classic study by Bloom and Broder (1950), remedial students were paired with more successful students who modeled how they frequently paused to check that they understood the material. The successful students restated sections of the material in their own words, asked themselves questions about the material, and thought of examples that relate to the material. The remedial students first observed, then began to incorporate these practices into their own studying. Results of this study showed a large improvement in comprehension test scores for these students, compared to a control group who spent the same amount of time with the material, but who did not receive any modeling.

Bloom, B.S. & and Broder, L. J. (1950). *Problem-solving processes of college students. Chicago: University of Chicago Press.*

Hofer, B.K., Yu, S.L., & Pintrich, P.R. (1998). Teaching college students to be self-regulated learners. In D.H. Schunk, & B.J. Zimmerman (Eds.), *Self-regulated learning from teaching to self-reflective practice* (pp 57 – 85). New York: The Guilford Press.

Vosniadou, S., Ioannides, C., Dimitrakopoulou, A., & Papademetriou, E. (2001). Designing learning environments to promote conceptual change in science. *Learning and Instruction*, 11, 381-419.

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