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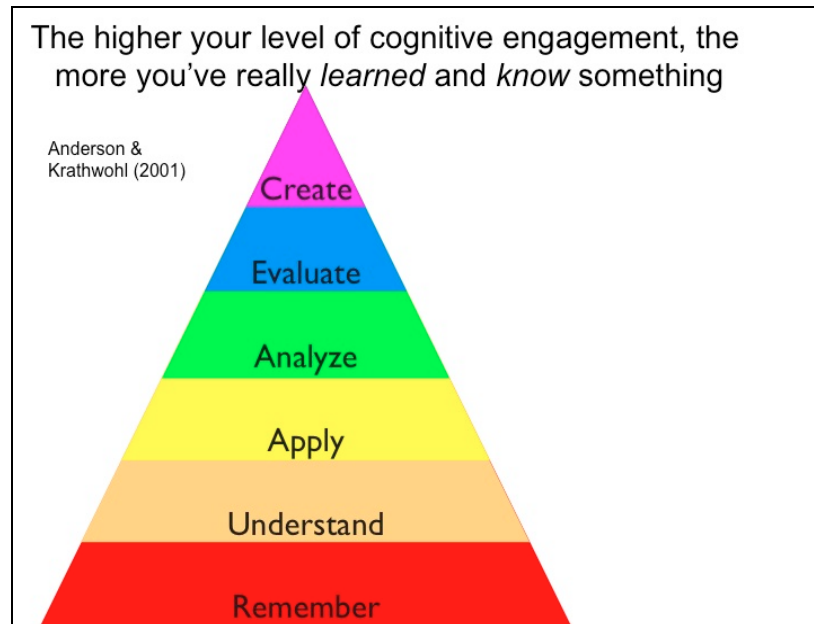
Levels of Learning

How do you know if you've really LEARNED something? How do you know if you really GET IT?

If you weren't happy with your exam score, or were surprised, or thought the questions were unfair, then you might not have understood the material at the level expected. This could be true in any class: You could study for HOURS, feel ready for an exam, but still do poorly or even fail, if you studied and learned the material at the wrong level.

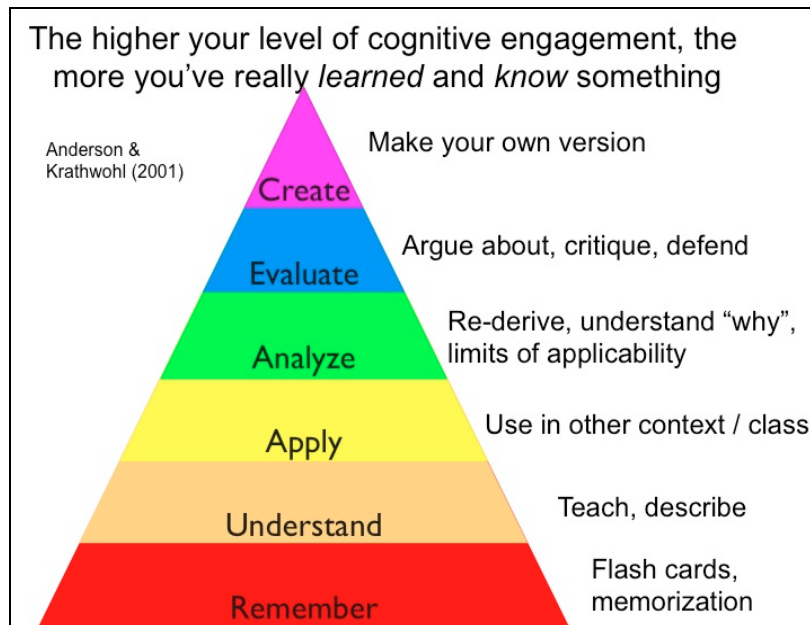
Beyond tests, this has far-reaching implications for your whole college education. So it is well worth taking a short aside to discuss learning.

There are many levels of *getting* something, from low-level to high. I suggest that you keep tabs on roughly what level you're on for the different things you're learning.



The lowest form of learning is **remembering**: can you repeat it back? Some don't even consider this learning, because trained parrots & monkeys can do this. You can do this without even knowing what you are saying. Above "Remembering" are many higher levels to learn.

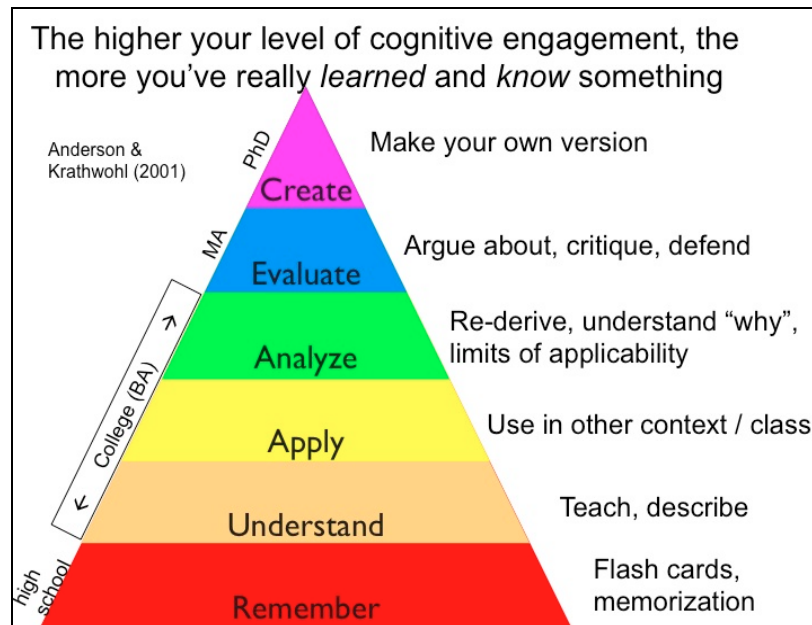
How do you know if you're learning at the 'Remember' level? If you find yourself studying using flashcards and memorization, this is the level you're working at. The figure below shows some example activities that are associated with each level that can help you recognize



In **THIS** class, the homework questions, study questions, *and exams are at the understand / apply levels*, where you are often asked to apply a concept learned in one way to a novel situation. The questions sprinkled throughout the reading and the Angel discussion board assignment questions are designed to help get you there.

Though it is not required in this class, hopefully in college you will at least sometimes get a chance to reach up to the Analyze level, or even higher. *It could* happen in this class, if you want it to: if you ask really good questions on piazza or in office hours, or make some really thoughtful posts on the discussion boards that go beyond the material, that could indicate that you're striving even beyond application. More likely for most students, this happens in some of your majors classes, in the subject(s) you're most interested in. There you will hopefully start to apply what you learn in one class to a different class entirely, or even to your own life. There you may start to ask about the limits of what you're learning, and just how far it can be applied. That's when you know you're moving beyond applying and into analyzing. But whether you're getting up to analyze, or just understand and apply, most college classes reach above the remember level. This one certainly does.

In general, the higher level of formal education / degree you pursue, the higher the level of learning will be required. The annotated figure below gives a *rough guideline* of the level of learning expected in high school, college (undergraduate), and post-graduate (Master's and PhD programs) education.



Note that these are not strict boundaries, and there may be exceptions to this breakdown. Some types of classes by their nature may come in higher or lower: for example, **lab classes usually require higher levels**. Survey classes or vocabulary-building introductory language classes may require lower levels. Other classes vary just by professor and their chosen style of teaching: Particularly good classes at a certain education level may expect more, or particularly bad classes may expect less. But keep in mind that you are not constrained to stay at a certain level based on your level of formal education or based on your professor's expectations. If you wish to go *higher*, you can always go above expectations for your own personal benefit. But you should not work at a level *lower* -- then you are missing out on the real educational benefit, plus you risk failing the class.

So if flash cards are your primary means of studying in a college class that expects understanding and application, you're in trouble. To be sure, remembering is a *starting point* -- you need the background and vocabulary in a subject to be able to use that vocabulary -- but it shouldn't be the ending point. It is no accident that these levels are displayed as a pyramid. The higher levels are built upon the lower levels. You need to master the lower ones before moving up. But moving up is not automatic. It takes deliberate effort, and different kinds of studying.

Here's the problem. Remembering worked for most people in high school, for most classes. Many are surprised when they get to college and that's not working. It used to work before, and now it doesn't. Every college professor has heard dismayed protests such as "But I studied for DAYS and I only got a C.", or "But I'm an A student!", or accusations like "Your test wasn't fair." How can well-meaning and hard-working students get surprised like this? Because they were prepared at the wrong level.

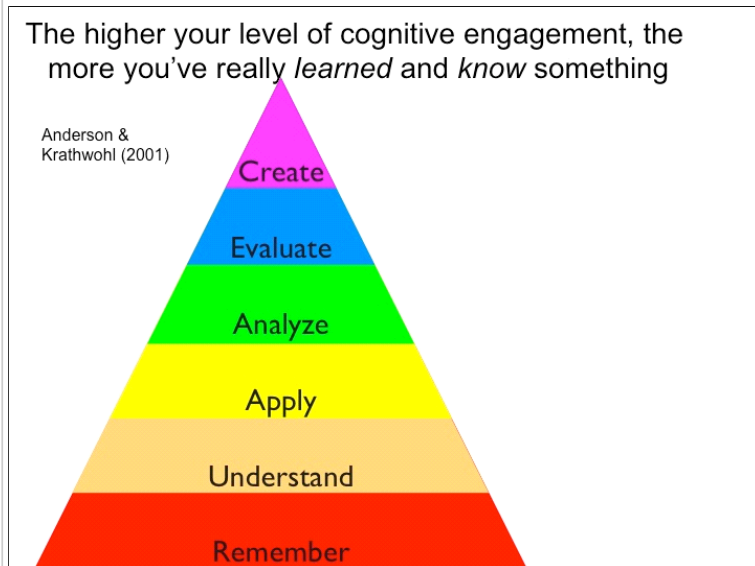
The trouble is, nobody tells you this. Professors tend to expect these

higher levels in college courses, but they don't warn you. They are not deliberately keeping you in the dark -- they don't realize that your level of studying is mismatched to their class. Most professors have never actually seen the pyramid of the levels of learning shown above; your Astronomy professor is only aware of it because her research specialty is education research. If you get away with memorization in some of your college classes, lucky you. Or rather, *unlucky* you, because you're wasting your time and money and squandering your college education on the lowest possible level of learning. Remembering facts doesn't make you a better person. That doesn't give you transferable skills, or improve your brain or your ability to think and reason -- which should really be the goal of college.

I encourage you to challenge yourself to go as high up this pyramid as you can when you're studying. For any subject.

Directions

This discussion is about the levels of learning discussed at the beginning of this lesson. Before proceeding, make sure you have carefully read the relevant page of the lesson so you know the background behind this graphic:



The questions to be addressed are the following:

- What was your reaction to learning about these levels of learning? Do you think this will be helpful to you, or not, and WHY?
- Think about all the classes you are taking this semester (or last time you took several classes at once). What level of learning do you think your professors expect, based on the kinds of questions and tasks they have asked of you so far? Do you think this is an optimum level, or would you rather see it higher or lower?
- What general study methods can you think of to recommend to a student who wanted to elevate their level of learning in all their classes?
- What is one specific thing a student could do to elevate their level of learning in this class, Astro 10?

In order to receive full credit for this assignment you must:

- Post your own answer in your own words, addressing all parts of the posed questions. Make a new post by clicking "[New Post](#)" near the upper left.
- Read all your classmates' posts.
- Choose a classmate's post to reply to: Click "[Reply](#)" to make your own comments on what they said -- whether you agree, disagree, or have any other comments, it is up to you.

If you are the very first one in your group to post (way to be on the ball!), you will have to check back later to wait for other posts to appear. DO NOT SKIP STEPS (2) and (3)! If you post first and ALL of your classmates post on the very last day (procrastinators!), then you may have up to two extra days beyond the deadline to post your reply.

As an incentive to post early, the first TWO people to post in each discussion group will receive a small amount of extra credit on their grade for this assignment: 2% bonus for the first person to post, and 1% bonus for the second.

You may make several postings if you like as the discussion evolves, but only two are required (one new post and one reply).

We will be monitoring the discussions and look forward to seeing your ideas and reasons behind them.

Reminders for all discussion assignments:

You will be responsible to participate in this discussion with a randomly-selected group of your classmates.

Place your post here; DO NOT submit it via email.

Use your own words. Your postings should all be original for this assignment. Using text from ANY other source -- published, web, another student, your own work from another class, etc. -- without proper citation is plagiarism. By university policy, this is a very serious offense with grave consequences. (See course syllabus under "Academic Integrity".) If you have any questions about what constitutes original work vs. plagiarism, please do not hesitate to ask your instructor or TAs.

Please do not wait until the last moment on the due date. As a courtesy to your classmates, to give them posts to read and reply to, please post early.

A few words answer is not sufficient. Please use full sentences and complete thoughts.

Use proper grammar and spelling; avoid text message shorthand and abbreviations. Although this is not an English or writing class, it is still a college class and so we will be practicing communicating professionally.

If you are having difficulty answering the questions even after reviewing the lesson material, please pursue the following avenues for help:

- > do the recommended additional reading,
- > post to piazza for help, and
- > contact the instructor or TAs in office hours.