

Who are the students in my class?

One of the key differences between us and our students is that many of them are in adolescence, a period of physical, emotional, and intellectual change that continues throughout the college years to about age 26. Our students have to juggle these developmental changes and manage an increasingly complex world outside of the university setting. Knowing more about our students' psychological development and the complexity of their lives can help us structure our teaching to maximize their learning and minimize our frustrations. This does not mean making things easier for our students; rather it means motivating and challenging them effectively.

What do we need to understand about our students so we can work with them productively?

What the research tells us about our students

- **Our students tend to have limited ideas about what learning is** and often equate learning with being passive, memorizing facts, or figuring out what the instructor thinks is right. Their experiences in high school and messages they pick up from popular culture may reinforce the idea that learning is best done quickly and with ease.
- **Our students are still developing their abilities to regulate their own learning.** The adolescent brain is developing great planning and metacognitive abilities, but impulse and emotion run ahead of this more reflective thinking.
- **Our students have complex lives outside of the university setting.** Many are first generation students who also work many hours a week. Many undergraduate students are juggling multiple demands on their time and energy outside of our classes, including work, family, finances, and more.

Using the research to work effectively with students

See student behavior for what it really is: an indicator of a developmental stage.

Our students do seem different from us in how they approach learning, and this can frustrate us. As experts, we learn by eagerly confronting the complexity and ambiguity inherent in our fields and carefully considering the contextual factors that make our research so tricky and stimulating. We also reflect on our thinking, questioning our ideas and tracking how our thinking is changing over time, and monitoring and changing our approaches to problems when we recognize that we're not making progress. Our students see learning in a different way: they tend to believe that there are clear-cut right and wrong answers. When they ask, "Will this be on the test?" they aren't being disrespectful, they are demonstrating an unsophisticated belief that success in our courses means amassing a body of facts and regurgitating them at test time. Alternately, our students may hold another set of unsophisticated beliefs about knowledge and think that there really are no right answers. In this case, we may find that they simply try to figure out what *we* want them to say or think. In both cases, our students often think that since we, their instructors, know what the right answers are, it is our job to simply tell them the right facts, answers, or opinions. They also tend to work impulsively and without much reflection: in part

because they are still developing the abilities to step back and think about their thinking, but also because they may have multiple demands on their time and are trying to approach learning strategically. Rather than letting these behaviors frustrate us, the first step to working effectively with our students is remembering that what initially looks like laziness or rudeness is often the result of their cognitive developmental stage combined with the complexity of their lives outside the university.

Move students toward more sophisticated views of learning.

The first step to effective teaching is to respond to our students with empathy, but then we also need to consider how to help students move beyond their unsophisticated notions about and approaches to learning. While our impulse is often to lay a foundation through lecturing or covering basic concepts before we let them do more sophisticated and realistic work, this approach can easily reinforce their unsophisticated ideas about learning and they may revert to passively and superficially skimming assigned readings and mindlessly copying down lecture notes. To ensure that students learn and work in ways that are more closely aligned with our own research and problem solving, we need to frequently require them to tackle realistic disciplinary problems. While it may seem that challenging our students in this way asks too much of them, this level of work is appropriate because it pushes them into the next stages of development.

Let's look at three key elements of disciplinary problems that can help students develop more sophisticated ideas about learning. (You may notice that they look a lot like problems you are likely working on right now in your own research).

1. They are multifaceted: they don't have one right answer (but do have better or worse answers).
2. They are complex: they require more than one perspective to solve them, and students will need to develop reasons for their solutions.
3. They require reflection: students will need to explain how they were thinking about the problem, how they came up with solutions, and what concepts they were drawing on.

Our students may initially balk at tackling these kinds of problem in our classes because they think we should be lecturing or giving them easier work to do, but these kinds of realistic problems will motivate our students in many ways. Peer interaction is a primary motivating force for our students, so asking them to work together can be exciting and they will often prepare more fully for a class where they are frequently required to solve problems with peers. Realistic problems also remind them that they can use what they learn in our courses in the real world: for first generation students and for students who already work in the world beyond the university, this is a clear demonstration of the relevance and meaning of our disciplines, which can counter students' beliefs that learning in our class is just a matter of pleasing us.

Examples of sophisticated disciplinary work students can tackle

From an Introduction to Physics course:

The activity described below invites students into the disciplinary thinking of physics with a familiar, realistic scenario.

1. For homework, students read a short chapter about momentum and its conservation.
2. In the class meeting after they've done this reading, students get in groups and each group is given a tennis ball and the following scenario:
Your friend is a high school baseball coach needs your help. She knows that follow-through (swinging the bat completely through the hit) is a key aspect of good hitting, but she can't quite figure out why. As a physicist, you can help her and her players. From a physics perspective, what two aspects of the follow-through swing **is are** most important?
 - A. The grip the batter has on the bat.
 - B. Where on the bat the batter connects.
 - C. The force on the ball.
 - D. How hard the batter hits.
 - E. How hard the batter swings.
3. Groups work for 7 minutes to make their decisions and prepare to share and defend their choices.
4. After 7 minutes, groups share choices by simultaneously hold up cards that show their choices. The instructor asks students to explain their thinking, noting carefully how students are using and interpreting the concepts about which they've read. The instructor then fills in gaps in students' understanding of the concepts with a very brief (8-10 minute), targeted mini-lecture.
5. Students are asked to individually reflect in writing about either a discovery they've made or a question they still have about momentum

From a Human Resources Management course:

The activity described below requires students to practice the disciplinary thinking and decision making Human Resources professionals use with an authentic scenario.

1. For homework, students read a chapter about key concepts and practices that human resources managers use to ensure a diverse and inclusive climate in organizations.
2. In the class meeting after they've done this reading, students get into groups and are given a short scenario describing how Google's Human Resources department responded to a controversial memo circulated within the company which reinforced gender stereotypes.
3. Groups work for 5 minutes to evaluate the effectiveness of Google's response in relation to concepts about inclusive HR practices from the reading. They have to decide how effective the response is on a scale from 0-10. To do this, they will have to discuss and debate how more than one concept they've read about applies to this novel situation. Students will have to work to consider how to defend the score they come up with.
4. After 5 minutes, groups share their evaluations of the situation by simultaneously writing their scores on the whiteboard. The instructor asks students to justify their scores and explain how they were thinking about the scenario and the readings as they do so, noting carefully how students are using and interpreting the concepts about

which they've read. The instructor then fills in gaps in students' understanding of the concepts.

5. Groups are now asked to select which of two key practices they would recommend to Google's HR department going forward. They discuss this for 5 minutes and again reveal their answers simultaneously. The instructor asks students to defend their decisions and explain how the practice they've chosen will potentially affect employees and the organization as a whole, noting carefully how students are using and interpreting the practices about which they've read. The instructor then fills in gaps in students' understanding of these practices.
6. Finally, students are asked to individually reflect on how their thinking is changing by explaining how they can see themselves using the inclusive practices they have been learning about in their future or current workplace.

Resources

Barkley, E. F. (2010). Analysis and critical thinking. In *Student engagement techniques: A handbook for college faculty* (pp. 186-217). San Francisco, CA: Jossey-Bass.

Patton L. D., Renn, K. A., Guido, F. M., & Quaye, S. J. (2016). Epistemological and intellectual development. In *Student development in college: Theory, research, and practice* (3rd ed., pp. 314-335). San Francisco, CA: Jossey-Bass.

If you'd like to learn more about how to help your students as they move through the different stages of cognitive development, please feel free to [request a consultation](#).