2018

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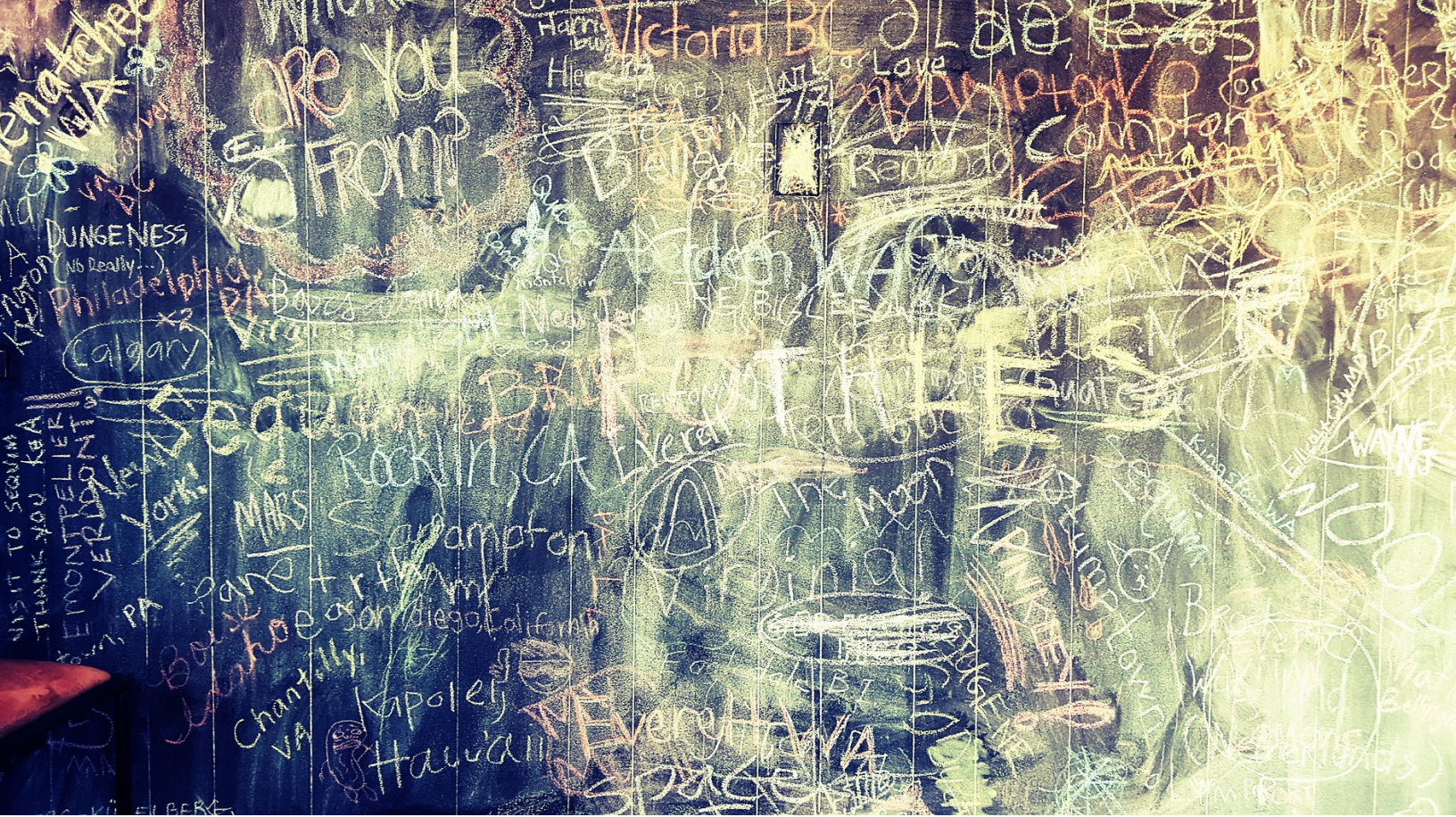
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Growth mindset theory has become common currency among educational circles. It's an intuitive concept: students learn better when they approach learning tasks as manageable challenges that can be accomplished with strategic action, mindful persistence, and critical reflection. Ironically, though, while we hope that our students practice this mentality, we often fall into the trap of a fixed mindset when we talk about teaching: some are born good teachers, and others aren't.

It has been ten years since I began teaching first-year students, which seems like a good time to consider the lessons I've learned—and the challenges I've overcome—along the way. These lessons came from failures, but the belief that I could become a better teacher led me to seek evidence-based best practices that I've incorporated over the years, during which the drop, failure, and withdrawal rates in my first-year courses have decreased by over 50%. For me, this reveals a powerful lesson: teaching practices *matter* for student learning.

I've distilled what I've learned into a few deceptively simple messages, but sometimes the simplest messages carry the most nuance and most provocatively challenge the orthodoxies that underwrite our daily practices. First-year students are a diverse demographic, and we should consider the many radical shifts they make when transitioning to college. If we match those shifts with our own adjustments in teaching practices, we can help first-year students acclimate to the often-confounding landscape of higher education.

Make Expectations Clear

High achievement always takes place in the framework of high expectation. — Charles Kettering

My first year of teaching, before the first exam of the semester, I asked students to write their own exam questions. I told them that I'd include the best question on the upcoming exam. As I flipped through the questions, my dread grew. Almost all questions tested memory or knowledge, the lowest level of Bloom's taxonomy. Almost none required conceptual thinking or *applying* knowledge and skills, all of which would be necessary for students to succeed on the upcoming exam. As I could have predicted, the scores were incredibly disappointing. This is an all-too-common moment. When student achievement falls far short of our expectations, it can leave us feeling frustrated, confused, disappointed, and doubting our own abilities. However, as I reflected on my classroom practices, I realized that my expectations, for students, weren't clear. I wasn't giving them examples of the types of questions they could expect to see on the exam nor did I explicitly address the skills I was expecting them to develop.

In addition to academic expectations, many first-year students are unfamiliar with conventions or commonplaces that many of us in academia take for granted. For example, many students may not realize that failure is a common experience in college and thus may feel that needing help is a sign that they don't belong. According to the 2014 *New York Times* piece "Who Gets to Graduate," many students who were successful in high school, particularly those belonging to racial or socioeconomic minorities, are susceptible to interpreting minor setbacks as indications that they can't succeed or don't belong in higher education. In addition, these students may feel uncomfortable reaching out for help. Students' early doubts can grow into an immobilizing fear about their own ability to succeed that may have little relationship to their academic promise.

While I learned from my missteps about conveying expectations and now more explicitly discuss conceptual skills I'd like students to learn, a recent comment revealed that I wasn't successfully conveying the purpose of formative activities I'd designed to challenge students' thinking. After what I considered to be a particularly successful class when students confronted their misconceptions head-on, a student approached me and said, "I think that you like it when we fail." Of course, this

wasn't true, but, obviously, I was not communicating the purpose of the activity if students felt like they failed *per se*. I had shared the five most commonly missed questions on the exam from the last semester and asked students work through them in groups. Even though they were not graded for correctness, students were frustrated when they didn't get the right answers and, moreover, were incredulous when I seemed "happy" about it. I *was* excited that I had focused their attention on misconceptions before any of it affected their grades, but I hadn't properly conveyed that I expected most students to struggle and, potentially, be unsuccessful. Without normalizing minor defeats, I inadvertently detracted from students' motivation (more on this later).

Making expectations explicit, as well as communicating the ubiquity of struggle, can motivate and encourage students to face their challenges. Setting high standards and having a framework in place to help students reach those standards helps students achieve at their highest potential.

Practice Student-Centered Teaching

Make everything but the learning easy. — Drew Koch

During my first two years of teaching at the University of Kentucky, I surveyed my classes throughout the semester and noticed that with each passing week fewer students attended class. Although I explained material clearly, was genuinely invested in helping students succeed, and received great teaching evaluations (from the 40% of students who completed them), I wasn't keeping students engaged over time. I had extensive training in best teaching practices, but, after taking a hard look at what I had been doing, I realized that I was predominantly lecturing. While this approach worked for *me* as a student and can be adequate for our best students, I wasn't reaching a sizeable portion of the class. It took me far too long to realize that student learning is not related solely to how clearly I can explain concepts. Effective teaching requires purposeful design, a scientific approach, and critical thinking about how to achieve learning outcomes. To me, effective teaching can be a form of scholarship approached with the same intellectual commitment and inquiry that are the hallmarks of good science. Now, I question, explore, test, and revise both teaching strategies and the assessment instruments that evaluate student learning.

Over the years, my approach has centered on helping students construct their own knowledge. My goal is to provide many resources and active learning opportunities in an environment of mutual respect to aid in students' knowledge construction. Student-centered teaching serves the needs of all students and supports their engagement with subject material. As one of my colleagues has stated,

Student learning is not related solely to how clearly I can explain concepts.

"our students are not us." What worked for us as a student does not work for all students. For me, student-centered teaching means ensuring that there are multiple means for students to engage with the material both inside and outside of class. Students should have multiple mechanisms for learning course concepts, methodologies, and skills (e.g. written text, clear notes, recorded lectures, active learning activities, and practice opportunities).

The design of a course can go a long way towards making our expectations clear *and* providing a student-centered experience. A study of introductory biology courses revealed that highly structured courses (that implement reading quizzes, active-learning activities, and weekly practice exams) can lower failure rates compared to less structured courses taught predominately through lecture and a few high-stakes exams (Freeman, Haak, & Wenderoth). Structured activities helped to reduce the disparity between at-risk students and their more prepared classmates. Although I never thought about it in this way, the more I adopted a student-centered approach, the more *structure* I added to my first-year courses. Structured activities ensure that students have access to materials that help them learn and that students are more acutely aware of expectations. An organized course that allows students to engage with the material in more than one way makes it easier for students to focus on our most important goal: learning.

Encourage Metacognitive Thinking

Learning how to learn cannot be left to students. It must be taught. — M.D. Gall, et. al.

A refrain heard in my office hours after first-year students took exams was that they "were sure" they were going to do well and shocked by the grade they earned. After a few years of these conversations, I investigated more deeply. I asked every student in my class to predict the score they would earn on the exam both directly before and after taking it. As my office hours foretold, the majority of students overestimated their score on the exam, even after completing it. The lowest-performing quartile of students overestimated their score by almost 40% before taking the exam! Even after completing the exam, very few students thought they'd scored below a grade of 60%. No wonder they were surprised!

Students' ability to distinguish what they know from what they do not yet know is critical for effective learning. However, as my experience illustrates, perceived abilities are often misaligned with actual knowledge. Many students come to college without accurate knowledge of their learning processes. Metacognition, an ability to think about one's own thinking, is a crucial component of academic success. There are many strategies that instructors can employ to encourage students to become more metacognitive. We can emphasize planning, monitoring, and evaluating one's learning process and integrate metacognitive thinking into the daily culture of the course. For example, we can add simple questions (such as "how confident are you in your answer?") to existing activities and questions we

pose. Based on their performance on a first exam, we can ask students to write a letter to themselves with advice about preparing for the next exam. In addition, we can model our own metacognitive processes, illustrating how experts approach problem solving and evaluate our solutions (Tanner).

> *The more I adopted a student-centered approach, the more structure I added to my courses.*

Finally, we can encourage study habits that build metacognition. Undergraduate students are largely unaware that specific study strategies are associated with increased metacognitive awareness, whereas other strategies are much less effective. For example, repeated review of material (such as re-reading notes) gives students the illusion that they can recall material and, perhaps even more significantly, gives them a false sense that they fully understand the *concepts* underlying the information (Brown, Roediger, & McDaniel). In contrast, retrieval practice activities such as taking practice exams reduce overconfidence and improve performance on subsequent assessments. We can encourage students to use feedback from practice exams to focus on weak points and adjust their strategies as necessary. These activities can make learning more accessible to a larger number of students, which makes a critical contribution to first-year retention (Pintrich).

Embrace Your Role in Student Motivation

> *How could you not be interested in organic chemistry? It's the very basis of life itself.* — David Tuleen

In evaluations of my teaching, students frequently comment that they appreciate my enthusiasm and genuine interest in biology: "her energy made me excited to walk into class," "[she taught] in a way that made the material seem fun and pulled me in even further." These comments underscore our important role in fostering students' motivation. Conveying my own sense of wonder about biology, combined with efforts to make concepts relatable to "real life," can encourage students to appreciate the joy of learning and to persist when they encounter challenges.

According to Ken Bain in *What the Best College Teachers Do*, the best teachers avoid relying on extrinsic motivators (like grades) and instead foster intrinsic motivation through a genuine interest in student success, verbal reinforcement, and positive feedback. Helping students to see connections between their interests and the course material also encourages intrinsic motivation. The best teachers encourage and build confidence while giving students challenges that lead to a sense of accomplishment. Against the water-cooler complaint that we can't *make* our students care, Bain and others would contend that, in fact, we *can* affect our students' attitudes towards their learning in significant ways, both small and large.

Motivational strategies don't have to be complex; simple cues can go a long way (Delong & Winter). Instructors can appeal to a sense of novelty (e.g., "I think this is really amazing. I've never seen anything like it before"). We can encourage students to see the applicability of course concepts (e.g., "if you want to be a doctor, you should know why overprescribing antibiotics can be dangerous"). We can build anticipation (e.g., "I haven't given you enough information to fully understand this concept yet, but you'll see it all come together when we begin unit 2 next week"). With the right tools, we can inspire students and encourage their desire to learn.

Show Empathy

> *Treat people as if they were what they ought to be and you help them become what they are capable of becoming.* — Goethe

My first-year course often enrolls over 300 students. It's easy to forget in that auditorium that the sea of faces is made up of real people with complex, unique challenges. The transition to college is often stressful and many of our students have additional challenges outside the classroom. When my mother was a college student, her father died suddenly while out for a jog, the day before her final exam. She reached out to her professor, who allowed her to complete the exam the next month. Her story makes me wonder how many students have similar experiences but never reach out to their instructors, or to me.

From the first day of class, I let students know that even though there may be hundreds, I realize that they are individuals with individual challenges. I strive to foster an environment of trust that runs both ways: I trust that students have a genuine desire to learn, and students can trust that I am genuinely interested in their success. I encourage them to reach out to me if there are issues that are affecting their performance. I don't want students to be intimidated to approach me with legitimate issues. I occasionally encounter a student whom I suspect isn't being honest, but I think it comes out in the wash. Students who are trying to game the system are rarely successful in the end.

When students reach out, I work with them to design a plan to help them succeed in the course (while holding them to the same standards as other students). My hope is that my course design facilitates students' efforts to stay on top of their studies in the face of these challenges. Each of my class meetings is recorded if anyone misses class (or wants to review for clarification). In-class and out-of-class activities, clicker questions, and helpful web links are available if class is missed, or if tools are needed for additional practice. Because students often have several exams in one day or may simply have a bad day, I allow them to replace their grade on one exam with an alternative exam offered before finals.

Good teaching strategies are mutually supportive; validating students as individuals and considering their perspectives can, in turn, positively impact motivation. Teaching with empathy and compassion is a direct avenue for building students' sense of belonging and value.

I still have much to learn as an educator. Amid the changing environment of higher education and the shifting demographics of our students, I'm sure to encounter students engaged in more and different transitions and struggles. With a growth mindset, high expectations, and best practices, I hope to address these challenges for the next ten years (and beyond) with the same commitment and dedication that I expect of my students.

<div align="center">REFERENCES</div>

Bain, Ken. *What the Best College Teachers Do.* Harvard University Press, 2004.

Brown, Peter, Henry Roediger III, & Mark McDaniel. *Make It Stick: The Science of Successful Learning.* Belknap Press, 2014.

DeLong, Matt & Dale Winter. *Learning to Teach and Teaching to Learn Mathematics.* Mathematical Association of America, 2011.

Freeman, Scott, David Haak, & Mary Pat Wenderoth. "Increased Course Structure Improves Performance in Introductory Biology." *CBE Life Sciences Education*, vol. 10, no. 2, 2011, pp. 175-186.

Pintrich, Paul R. "The Role of Metacognitive Knowledge in Learning, Teaching, and Assessing." *Theory Into Practice*, vol. 41, no. 4, pp. 219-225.

Tanner, Kimberly. "Promoting Student Metacognition." *CBE Life Sciences Education*, vol. 11, no. 2, 2012, www.lifescied.org/doi/10.1187/cbe.12-03-0033.

Tough, Paul. "Who Gets to Graduate?" *The New York Times Magazine*, 15 May 2014, www.nytimes.com/2014/05/18/magazine/who-gets-to-graduate.html.

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Dr. Jennifer Osterhage is an Assistant Professor in the Department of Biology at the University of Kentucky. She is in her 11th year as a teaching faculty member and has taught introductory biology and genetics to over 3000 students. Jennifer uses an active learning approach that involves demonstrations, activities, and interactive questioning during class. She is dedicated to first-year student success and to helping students successfully transition to college. Her pedagogical research investigates methods to promote student-centered, self-regulated learning.