



Fair and Equal

Deborah Bracke
Augustana College, Ill.
deborahbracke@augustana.edu

“There is nothing more unequal than the equal treatment of unequal people.” This quote, attributed to Thomas Jefferson, is often used in gifted education to justify the attention, resources, and opportunities provided to those who are more academically talented than others. It’s intended to connote a sense of fairness, a feeling that not every student should have the same classroom experience. Rather, there should be an emphasis on *appropriate* instruction, instruction that is responsive to individual needs, interests, and abilities.

Yet the heat of the college experience often produces an uncomfortable state of tension between what is “equal” and what is “fair.” Many of us wonder whether both can be achieved simultaneously. Certainly, professors can adapt instruction so that a variety of needs can be met. But can teaching be personalized so that all individual differences and learning styles are privileged in every classroom?

Reaching everyone has become more challenging as our students have more varied backgrounds, perspectives, and experiences. We have more international students, more students with identified disabilities, and more first-generation students. Our students vary in social class, sexual orientation, age, religious background, family support, and academic preparation. Significant gaps in ability and achievement also exist.

It is more important now than ever to know who our students are, to

appreciate how they learn, and to offer suitable ways for them to demonstrate their understanding. It is very easy to lose sight of individual students when classes are large and this diverse. Yet the individual student should be our primary focus. I believe our collective ability to respond to individual learners will ultimately determine the success of our institutions.

It is more important now than ever to know who our students are, to appreciate how they learn, and to offer suitable ways for them to demonstrate their understanding. It is very easy to lose sight of individual students when classes are large and this diverse. Yet the individual student should be our primary focus.

Colleges across the country have taken a hard look at these changing demographics and 21st century skills. Many campuses have implemented a variety of academic initiatives, support services, and high-impact educational practices that respond to a “diverse and changing world.” In many respects, our resolve has produced worthwhile reforms in teaching (instruction that is more student centered), curriculum (content

that is more skill based), and assessment (evaluation that is more evidence driven). But while these reforms are relevant to all areas of academic study, there is no clear consensus on how we can structure instruction to meet this variety of *individual* needs.

What steps are we willing to take to help those with a “less than perfect” precollege experience? And how can we maintain academic rigor while resolving the conflict between what is equal and what is fair?

I suppose this is where teaching can take on a new look. This is the spot where we, as college professors, could create a set of conditions that enable us to teach with more flexibility, greater responsiveness, and less rigidity. This necessitates an understanding that goes beyond the highly ritualized events of a midterm and final exam. It encompasses an instructional experience that is emergent, dynamic, complex, and contextual. Perhaps a more empathic

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Editor-at-Large
Maryellen Weimer, PhD
grg@psu.edu

Managing Editor
Katie Carney
katie.carney@magnapubs.com

President
William Haight
whaight@magnapubs.com

Publisher
David Burns
dburns@magnapubs.com

For subscription information, contact:
Customer Service: 800-433-0499
support@magnapubs.com
www.magnapubs.com

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- Keep the article short; generally between 2 and 3 double-spaced pages.
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The Testing Effect and Regular Quizzes

The “testing effect,” as it’s called by cognitive psychologists, seems pretty obvious to faculty. If students are going to be tested on material, they will learn it better and retain it longer than if they just study the material. And just in case you had any doubts, lots of evidence has been collected in labs and simulated classrooms that verifies the existence of this testing effect. But as with much of the research done in cognitive psychology, it has not been studied much in actual classrooms, and of specific interest here, in college classrooms. When it has been studied in college classrooms, the results aren’t as consistent as might be expected, but then the study designs aren’t all that similar.

The use of quizzes offers a good arena in which to study the testing effect. Students are regularly tested on course material, and that repeated testing should improve their exam and final scores. However, design details may influence the outcome. How many quizzes would students need to take to gain the testing effect benefit? Does it matter if the quizzes are announced or if they’re pop quizzes? Should the quizzes be graded or ungraded? If graded, does it matter how much they count? Is the testing benefit present if the quiz questions come from material covered in class? What if the quiz questions come from assigned reading before that material is covered in class? Does the testing effect apply to certain kinds of questions but not others—say, test questions that are the same as the quiz questions, or similar to the quiz questions, or totally new questions?

What we really need here are a set of best practices—those design details that most reliably achieve the desired results. The caveat, of course, is that any set of best practices in the teaching and learning realm are the ones that usually work best. With different student

cohorts learning different content from different teachers at different kinds of institutions, there are too many variables to expect consistent results. Best practices have value in that they offer a place to start.

A recent study of quizzing in introductory level psychology courses explored some of the questions regarding the design details of a quiz strategy. In the control section, each class session had a designated topic and assigned reading pertaining to that topic. Some of the reading material was discussed in class, and some was not. The instructor regularly encouraged students to keep up with the reading.

Does the testing effect apply to certain kinds of questions but not others—say, test questions that are the same as the quiz questions, or similar to the quiz questions, or totally new questions?

In the experimental section, students had the same content schedule and reading assignments, but they had a quiz every class session. The quizzes included two multiple-choice questions from content covered in the previous session and three questions from assigned reading not covered in class. The quizzes were graded and counted for 25 percent of the final course grade.

Both sections took three exams, and each of those exams included 15 questions from the assigned readings (plus other questions unique to each class). Some of those questions were the same questions used on the quiz, some

Nonverbal Communication in Online Courses

So many important messages are communicated nonverbally in face-to-face courses. There's tone of voice, facial expressions, gestures, and the use of space—all with the potential to enhance the meaning of the verbal message. In online courses with the instructor not physically present, nonverbal communication is not an option—at least that's what many instructors think. Authors of a recent study appearing in *Communication Education* take issue with that conclusion. They describe three kinds of nonverbal communication that occur in online courses, each with the potential to create the sense that the instructor is present in the course and interested in fostering student engagement.

Tone

"Just as instructors cannot *not* communicate; they cannot *not* set a tone" (2017, 39). For example, if the online course material is plain, mostly text with no or few visual features, that can set a "cold" tone and may be interpreted by students as a course with an instructor who doesn't care much about students. A "warm" tone can be conveyed nonverbally in an online course through the use of features such as emoticons or manipulations of the text. Feedback regarding a great idea can be given extra meaning with a different font: **Great idea**, or with punctuation: Great idea!!! Or with caps: GREAT IDEA.

Visual imagery, including pictures, graphs, models, clipart, and video, appeals to the senses. It evokes emotions. If a course "looks" interesting, it may be perceived as being more interesting. Visual imagery can also be used in online courses to personalize the instructor, displaying information about hobbies, pets, or favorite places.

Color can also convey messages about the tone of the course. Colors other than beige or gray, according to these authors, are likely much more "energizing,

attention getting, and engaging for online students" (2017, 40).

All of these aesthetic aspects of the course should fit together to make the course look well organized and coherent. If these elements are present and working in harmony they communicate "immediacy," which refers to a collection of nonverbal behaviors that convey positive messages of liking and closeness. Those nonverbal behaviors also enhance motivation.

Chronemics

These are nonverbal messages communicated by time. In the online course, these messages are conveyed by how soon the instructor responds, how long the message is, and how frequently the instructor communicates. If instructors respond promptly, they are perceived as being accessible and available. If the response is considered slow, that's associated with messages of dominance and a sense that the receiver is unimportant. Short messages can be seen as hurried. Based on their analysis of nonverbal messages in online courses, the authors recommend that instructors frequently participate in online discussions. They may be viewing student posts, but their presence cannot be seen unless they comment. However, the need to be seen in these online exchanges must be balanced against how easily instructors can appear to dominate online discussions.

Feedback

Prompt feedback is needed if students are to use it to improve subsequent assignments. Beyond that well-established fact are the positive nonverbal messages conveyed by prompt feedback. The quicker and more extensive the feedback, the more responsive the online instructor is thought to be.

In their study, these faculty researchers coded nonverbal behaviors like these in 51 different online courses. The courses

ranged from first year to graduate level and represented 23 different disciplines. They were coded from week nine to week 14 of a 16-week semester. Students in these courses were also surveyed about the responsiveness and feedback of their instructors. Finally, an instrument was used to measure students' perceptions of instructors' engagement in the courses. Results showed that the instructors of these courses were choosing "warm" media and using it to create more social presence and student engagement in the courses. However, not all the means for enhancing nonverbal communication were being used to their full potential. For example, some graphic elements of the course, such as the use of color, emoticons, and personal images, were not being used all that often in the courses analyzed in this study. "Perhaps instructors lack time or consider these elements unimportant or unprofessional. Because instructors can create immediacy with little effort in the traditional classroom, they may not see the parallel need in online classrooms" (2017, 48).

Nonverbal communication is an option in online courses, but it's different. However, even though the messages are conveyed through different forms, what's being communicated nonverbally is strikingly similar to the nonverbal messages conveyed in face-to-face classes. Does this instructor care? Is he present in the course? Will she help me? Is he committed to my success? Does she come across as a real person?

Reference: Dixon, M.D., M.R. Grenwell, C. Rogers-Stacy, T. Weister, and S. Lauer. 2017. Nonverbal immediacy behaviors and online student engagement: Bringing past instructional research into the present virtual classroom. *Communication Education* 66 (1): 37–53. 🌱

A Peer Review Structure That Improved Student Writing

Student peer reviewers can provide feedback that improves writing. Lots of research can be cited in support of that statement. The problem, as Kimberly Baker sees it, is there's "substantially less research available on the process of structuring the peer review to maximize these benefits" (2016, 180). She raises questions about three structuring decisions that teachers face when designing a peer review activity.

When in the writing process should the peer review be scheduled? Given how regularly students procrastinate, it would seem prudent to schedule a peer review earlier rather than later in the process. If it occurs, say, a week before the paper is due, that also dictates the kinds of revisions students can make. That late in the writing process, it becomes more about polishing what they have and less about substantial content changes.

Research makes it clear that students are best positioned to provide formative feedback—to offer suggestions that will help the writer improve the paper, as opposed to rendering judgments or suggesting grades. They don't have the experience necessary to make these quality decisions, and most are too emotionally vested in the grading process to be objective. Baker's question here is how to elicit formative feedback from student reviewers. Many faculty do, but few have collected evidence documenting the efficacy of their approaches.

Finally, there's the question of what students do with the feedback they receive from peer reviewers. There are several relevant issues here, starting with how most students see the revising as a straightforward process of "cleaning up" the first draft. "They revise their drafts in a linear manner, starting at the opening paragraph and working their way to the end. They make changes in words or phrases but leave the original meaning intact" (2016, 182). These "surface-level" changes may not improve the paper significantly, and often, it's significant improvement that's needed.

Questions like these show that even though numerous studies have investigated peer review, most of them have focused on outcomes, and not the process. In response, Baker designed a study that explored process issues in these three areas. She used six junior level sociology courses (enrolling a total of 91 students) that required a final term paper. Four weeks before the papers were due, students were required to submit a draft for peer review. Drafts were submitted online, which allowed Baker to blind them so that the reviewer did not know the paper's author, and the author did not know who reviewed the paper. The reviewers received an instruction packet and a rubric along with 20 minutes of in-class instruction. Each reviewer completed the rubric and added comments. The reviews were graded.

Structuring the peer review activity

Students are best positioned to provide formative feedback—to offer suggestions that will help the writer improve the paper, as opposed to rendering judgements or suggesting grades.

in this way garnered three results. First, students started working on their papers earlier. Only 16 students, or 16.6 percent, submitted an incomplete draft, one that was less than 33 percent of the final paper length. The rest of the students had drafts with content for the multiple required sections of the paper.

Second, a detailed analysis of the feedback provided by the reviewers revealed that "student reviewers consistently gave appropriate and substantive feedback" (2016, 187). The majority of their comments

recommended "meaning level" changes (81.5 percent).

Finally, and perhaps most importantly, a comparison of the draft and the final paper revealed that the papers had been revised with most of them having been changed significantly. Almost 60 percent of the students had added new material. Most of these "meaning level" changes involved the addition of new material, rather than revisions of existing material. The revision process still appeared to be linear, with most of the new material being added to the end of the paper. Experienced writers move text around and redevelop content throughout the paper. Baker says that the approach taken by these students meant that they "were framing their papers in the early paragraphs before they knew how the end would develop" (2016, 189).

Many teachers continue to be hesitant about peer review, and with some good reasons. The benefits do not accrue automatically. The peer review activity must be designed carefully and implemented in ways that convey its importance to students. If it's an activity taken seriously, then students learn both by offering the feedback and receiving it.

Reference: Baker, K.M. 2016. Peer review as a strategy for improving students' writing process. *Active Learning in Higher Education*, 17 (3): 179–192. 🌱

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Students Learning from Students: Objections and Answers

Two articles in this issue explore students learning from and with each other—one deals with peer feedback on writing and the other with the relationship between peer learning experiences and psychological well-being. Both contribute to the now voluminous literature on how and why students can and should learn from their peers.

Despite the evidence, many faculty still worry about peer learning. They may use it, but often without confidence and with a lot of concerns. Here's a list of some of the main objections and some possible answers to them.

What students learn from other students won't be correct

That's a possibility. Students don't have the teacher's expertise. They don't know the content as well as the teacher. But the teacher is there overseeing the process, and can't mistakes be corrected and learned from?

What students learn from other students will be superficial, oversimplified, and watered down

That description fits a lot of first learning. It marks the place where we start understanding. What students have going for them is the ability to communicate with each other. They can explain things in ways that make sense to them. No, they don't usually offer sophisticated teacher-like explanations, but often when those complex explanations are what students hear first, they don't always lead to learning.

What do students know about teaching?

Probably not much. But neither do parents, Sunday school teachers, or college professors when they first start teaching. Student teachers have the advantage of recent memories of how they came to understand the content. They know how they figured out the problem. They know what examples

helped them understand. They know how they answered the question. They have recent learning experiences from which to draw. And, like us, when they teach, their learning benefits.

Despite the evidence, many faculty still worry about peer learning. They may use it, but often without confidence and with a lot of concerns.

Interpersonal dysfunction will compromise the learning

All sorts of bad things can happen when students work together. They can individually and/or collectively decide to not take the task seriously. They will do it, but just barely. They can have disagreements, not be able to resolve them, and reach a point where they can no longer work together productively. However, group dysfunction isn't inevitable. Simple instruction in how to work together can help to prevent problems, and students can be empowered to address the issues related to how they're working together. They can learn how to work together productively, if we teach them.

What's learned from others can't substitute for the learning work that needs to be done alone

No, the group can't learn it for the individual, but others can support individual efforts. A group can motivate the work that needs to be done individually. True enough, nobody can learn something for somebody else. Learning is an individual act, but learning can and does happen in the presence of others and with their support.

Grades measure individual mastery of material

When students are working on projects together, it's much less clear how much each individual knows, but not all student-to-student collaboration needs to be graded. Cooperative learning advocates argue against grading group work. The purpose of the collaboration in cooperative learning groups is support of individual learning efforts. Group work can also be designed so that parts of the project are the responsibility of individuals. Those parts can then be assessed in terms of individual knowledge.

Some students don't think they can learn with others

We learn from others throughout our lives. Mostly, students who want to work alone are responding to poor previous experiences—study groups that wasted time and didn't review with intensity. If study groups are a course requirement, then teachers must design them so that robust interaction is necessary. We live in cultures where most professional work involves working with others. The agenda in our courses isn't to make students like working with others. The goal is to provide experiences through which they can learn the skills of collaboration.

It's an abrogation of the teacher's responsibility

Students don't pay money to learn from other students. They pay money to learn from the teacher. Right. The goal of peer learning isn't to replace the teacher. But in addition to content expertise, teachers also know how to facilitate learning—to create conditions that are conducive to learning, to design assignments and activities that promote learning. Teachers are learning experts. They know that not all learning happens in class or involves them teaching. 🌱

Peer Learning and Psychological Well-Being

The reasons we should be letting students learn from and with each other continue to accumulate. Here are highlights from a large cross-disciplinary and cross-institutional study that explored the relationship between psychological well-being and peer learning experiences.

The researchers started with definitions. They opted for a definition of peer learning that had been used previously in research, “[t]he acquisition of knowledge and skill through active helping and support among status equals or matched companions” (2016, 193). Said more simply, peer learning includes a broad category of group work. This research team acknowledges that distinctive kinds of group work are grouped together in this definition, namely, cooperative and collaborative learning, which are often defined in terms of their differences. However, this research team identifies what these two approaches to peer learning have in common: (1) both view active learning as essential to meaningful learning; (2) both see learning as a social act that involves interaction with peers; (3) both view the teacher’s primary function as facilitation; (4) learning is a shared responsibility between students and teachers; (5) the social construction of meaning plays a key role in learning; and (6) teachers should intentionally design the goals and activities of peer learning (2016, 192). These shared characteristics justify the broad characterization of group work used in this research.

Psychological well-being has also been defined in previous research: “the ability to develop, maintain, and appropriately modify interdependent relationships with others to succeed in achieving goals” (2016, 194). C.D. Ryff’s work identifies six dimensions of well-being that have been used extensively in research, and his instrument for measuring it was used by this research team. Psychological well-being includes autonomy (self-determination,

independence), environmental mastery (control of external activities, taking advantage of opportunities), personal growth (open to new experiences, positive about change), positive relations with others (warm, satisfying, trusting relationships with others), purpose in life (sense of direction, finding meaning in life), and self-acceptance (positive attitudes toward self). “High levels of psychological well-being are associated with many positive life and health outcomes, such as happiness, purpose, and satisfaction” (2016, 195).

Group work in its various forms has been shown repeatedly to positively influence learning outcomes. Students can learn course content from and with others.

Some research on peer learning and psychological well-being has been done previously, but only with single groups or across course sections. Previous research has not addressed whether the effects of peer learning experiences are different depending on variables such as gender, race, or academic ability. And finally, up to this point, no research has looked at the influence of peer learning on the six subscales within the Ryff instrument that correspond to the dimensions described above. This study starts to address these gaps in the research.

Data used in the study were collected as part of the Wabash National Study of Liberal Arts Education, which involved 17 four-year colleges and universities located in 11 different states and four general regions of the United States. Data were collected from the student cohort at three different times, starting at the beginning of their college careers and ending shortly before graduation.

Overall, the results indicated a modest general effect of peer learning on psychological well-being at the end of four years of college. “These results suggest that working closely with peers on classroom projects may exert a modest positive influence on students’ psychological well-being” (2016, 200). And that positive effect was experienced across the board by students. “These results suggest that peer learning has a positive influence on students’ overall psychological well-being, regardless of their sex, race, or academic ability” (2016, 201). And finally, the positive, statistically significant influence of peer learning was associated with five of the six Ryff subscales. In the case of the positive relations with others scale, the results suggest “that engagement in peer learning may not help students develop traits associated with positive relations with others” (2016, 201).

Group work in its various forms has been shown repeatedly to positively influence learning outcomes. Students can learn course content from and with others. Group experiences have also been shown to develop the various skills associated with productively working with others. And now, in this case, peer learning is emerging as an experience with positive implications for students’ overall psychological health.

The reasons for using group work are convincing but not without a caveat that needs to be regularly repeated. The benefits of working with others are not automatic. They do not result from simply putting students together in groups. Group work that promotes learning is carefully designed, implemented, and assessed.

Reference: Hanson, J. M., T.L. Trolan, M.B. Paulsen, and E.T. Pascarella. 2016. Evaluating the influence of peer learning on psychological well-being. *Teaching in Higher Education* 21 (2): 191–206. 🌿

FAIR AND EQUAL FROM PAGE 1

grasp of the knowledge and skills that constitute varying levels of success is called for. Unlike the days when one standard and style *purportedly* fit all students, in today's environment, it may be important to diversify our syllabi and provide alternate assignments. Perhaps we should develop a more expanded definition of success—one that supports preferred ways of learning and different ways of knowing. This may include additional contact hours, more student choice, varying response options, modified content, testing accommodations, and second chances. Supplementary outlines, pre-instruction, and other organizational supports may also be in order. Assignments might even have several access points with rubrics/assessments that address distinct learning profiles.

Most certainly, all this does not warrant lower expectations or a charitable *watering down* of the college curriculum. Ensuring that all students have the support they need to be

academically successful is fundamental to a broader sense of human relations, social responsibility, and a concern for the good of others.

Ensuring that all students have the support they need to be academically successful is fundamental to a broader sense of human relations, social responsibility, and a concern for the good of others.

Maintaining standards and responding to individual students requires that our mindset be intentional and our assumptions well grounded. Yes, it may be less convenient to create instructional materials that meet the needs of a student from a minority culture. Yes, it takes time to adapt a teaching strategy to meet the needs of a student with a lower level of academic preparation. And yes, it may be troublesome to provide

individualized outlines so that a student with an undiagnosed learning disability can excel. However, structuring our teaching so that we can anticipate and respond to student needs enriches our role as educators.

I believe we are poised to engage in a new and largely unfamiliar conversation. And although some may call me a hopeless romantic (or foolishly impractical), I believe it is time to reconcile the asymmetry between what is “equal” and what is “fair.” Being a teaching professor is a formidable responsibility, and there are times we must stretch our conventional views of the instructional experience. It will be a different journey for each of us, but with a watchful eye and a few small steps, we can reshape the subtext of teaching so that these two perspectives are compatible. Only by understanding where each of our students is coming from can we create the conditions that get them where they need to go. 🌱

TESTING EFFECT FROM PAGE 2

were similar, and some were entirely new questions.

The quiz section “scores were significantly higher than the control class” (2017, 21), and they were higher on all three types of questions. A survey of students in the quiz section also revealed that anticipating daily quizzes helped the students study more, encouraged them to read more, reduced the amount of cramming, and prompted students to change their study habits.

Another study referenced in this research found the presence of the testing effect for ungraded quizzes but not for graded pop quizzes. These researchers wonder if the predictability of a quiz every class session reduced the anxiety associated with always wondering if today was going to be a quiz day.

This research doesn't answer all of the quiz design questions, but it does address some of them. And although these answers may not be definitive, they illustrate how the details of an instructional approach, such as using quizzes, can be explored empirically.

Cognitive psychology has validated the testing effect. Classroom research like this begins to identify the details that make it work reliably in actual teaching situations.

Reference: Batsell Jr., W.R., J.L. Perry, E. Hanley, and A.B. Hostetter. 2017. Ecological validity of the testing effect: The use of daily quizzes in introductory psychology. *Teaching of Psychology* 44 (1): 18–23. 🌱

Breaking the Cramming Cycle and Improving Memory

Tyler J. Griffin and Kenneth L. Alford

Brigham Young University, Utah

Tyler_Griffin@byu.edu

Ken_Alford@byu.edu

How much will students remember from your course tomorrow, next week, next month, next semester, or next year? Let's be honest, in most cases, not as much as we would hope or as much as they should. What's at the root of this problem? Students often get distracted during class, and they don't listen well. They cram before exams, take the tests, and then promptly forget most of what they "learned." But there is good news: teachers can use proven strategies that help students break this nonproductive pattern and learn course material more deeply.

Early researchers such as Hermann Ebbinghaus have shown that most of what we experience and learn is quickly forgotten, and that's actually a good thing. If we remembered everything, our minds would be cluttered with too much information. Because everyone forgets, teachers need to be realistic about how much students will retain.

So what can teachers do to help students remember more of what they learn in a course? While there are many influences that affect memory and forgetting, we believe it starts with an awareness of three key factors that strengthen a student's ability to remember facts, rules, relationships, processes, skills, and other important information. According to J.R. Anderson in *Learning and Memory: An Integrated Approach*, these factors are recency, frequency, and potency.

Recency

The memory strength of an individual item is stronger the more *recently* it has been encountered. Students figured this out a long time ago. This is why they cram for exams. If students wait until shortly before an exam and review what they anticipate will be tested, they

can remember it for the exam. Shortly thereafter, the information fades yet again into functional oblivion. Take two students, for instance, who both review their notes for your exam. Student A reviews two days before the exam, and Student B reviews one hour before. All other things being equal, Student B will outperform Student A because of recency. Teacher need to help students recognize that shorter, distributed practice sessions improve exam performance better than cramming.

One approach to help deepen learning and decrease cramming is to pay attention to the types of questions you ask on a test. Cramming works best when exam questions concentrate on details—information that can be memorized and regurgitated. When exam questions require application and judgment, students will quickly learn that cramming is not an effective strategy in your course.

Frequency

The memory strength of an individual item is stronger the more *frequently* it has been encountered. This reality also encourages students to cram. They will repeatedly review selected course material in a compressed time frame (often right before the test) instead of spreading reviews over time, which increases the likelihood that the information will be retained longer. To illustrate, two students both review course material five times. Student A crams all five reviews into the hour immediately before the test. Student B spreads four reviews across the previous two weeks, with a fifth review during the hour before the exam. Both students spend the same amount of time reviewing. For students of equal ability taking a demanding test, Student B will likely outperform Student A on that exam and will also remember the material longer. Spreading out review and recall over time goes by several names, spacing or lag effect and distributed practice, for example.

Potency

The memory strength of an individual item is stronger the more *powerfully and notably* it has been encountered. Consider for a moment what you remember from your own undergraduate education. Odds are you remember learning moments that were unique or out of the ordinary. The same holds true for students in your courses. Students are, after all, more than just cognitive in nature. There are also social, emotional, and affective elements at play in their life and education. Teaching strategies that engage more of the breadth and depth of a student's life and experience are more likely to be remembered. For example, Teacher A presents his or her class with a long list of textual facts. Teacher B presents the same information, but in an engaging and thought-provoking manner that awakens curiosity and a sense of relevant discovery in the students. And once again, all other things being equal, Teacher B's students will outperform Teacher A's on a rigorous exam and retain the information longer.

What can teachers do?

- Identify those elements of your course that are the most important for students to remember.
- Design your course to help students maintain recency and frequency for important elements.
- Engage your students at multiple levels of cognition, participation, relevance, and application when teaching your most significant elements.
- Teach your students about the power of recency, frequency, and potency to help them understand why they forget and what they can do to better remember important items.

Being aware of student limitations regarding learning and remembering is only half of the solution. Put the power of recency, frequency, and potency to work in your course! 🌱