HELPING STUDENTS MEMORIZE: TIPS FROM COGNITIVE SCIENCE

How do we help students learn in courses where there is a lot of memorization, such as in anatomy or history? This question is itself is tricky because most teaching professionals are heavily invested in the idea that learning isn’t about being able to regurgitate facts on an exam. We also worry that emphasizing rote learning steals time and effort away from the deeper thinking that we want students to do. But memorization does build content knowledge and expertise and it can complement critical thinking, reasoning and innovation. So here are some ways to help students manage memorization:

- **Emphasize context and purpose:** ask yourself why students are being asked to memorize these facts in the first place. If students can readily answer that question and if they can picture future situations in which they will use the information, they will be better primed to remember it.

- **Break down new vocabulary words, especially those that are more than two syllables long:** Allow time to rehearse and remember the first couple of syllables before tacking on later ones. Also keep in mind that this process will be easier for some students than others due to wide variation in phonological loop capacity; you may want to design in a “mastery learning” or other individualized approach for vocabulary so that students can move through at their own pace.

- **Visualize information:** For most people, imagery is highly memorable, perhaps because so much of the brain is devoted to visual processing. Memory champions, such as the ones populating the best seller Moonwalking with Einstein, use elaborate visualization strategies to achieve incredible feats of memorization. Similarly, strategies such as the keyword mnemonic work by linking word sounds to images (such as using an image of a cowboy on a horse to remember the Spanish word “caballo,” which sounds a bit like “cowboy”).

- **Take advantage of the “Big Three” applied memory principles—testing, spacing, and interleaving:** Briefly, these refer to the facts that quizzes are a great way to study and that we do best when we spread out our study sessions and alternate between different topics. Tackling a big memory project such as human anatomy means we need every advantage we can get, and dozens of research studies have supported these three as producing the biggest memory payoff for the time invested.

- **Avoid the rereading trap:** Students tend to fall into passively reviewing material and in doing so they miss the key advantage of techniques such as testing: retrieval practice. Retrieval practice strengthens memory, but it works only when we actively challenge memory. Flash cards, a favorite student strategy, are fine as long as students use them to actively quiz themselves.

Michelle Miller, Ph.D., November 2014 issue of The Teaching Professor.

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**D2L TIP OF THE MONTH**

Did You Know?

Panopto is the university's video streaming and lecture capture platform. It accomplishes several core tasks:

- Record your classroom. (Students can watch the recordings for reviewing difficult materials before major assessments.)
- Record mini-lectures or introductions for your course and embed them in D2L.
- Live stream study sessions with students chatting questions to you.
- Have students create their own recordings of themselves, items outside of the classroom, or events and then upload them to your Panopto Dropbox Folder via the D2L integration.
- Stream MP4s that you have access to. (The University Library can assist you in securing copyrights.)

The fastest and easiest way to learn Panopto is to schedule a 1:1 meeting with Dwight Farris or Jeffrey Jones. They are happy to come to your office or meet you online if you are remote!
Another idea for writing in your Gen Ed course: Zines

What are zines?
"...zines are noncommercial, nonprofessional, small-circulation magazines which their creators produce, publish and distribute themselves." - Stephen Duncombe, Notes from the Underground: Zines and the Politics of Alternative Culture

Why teach with zines?
"Zines...challenge the easily digestible mainstream media. They can open students' eyes to other outlets for information, showing alternate sources and forcing students to see how the accessible information that is often just taken for fact also has origins and agendas." - Amy Wan, "Not Just for Kids Anymore: Using Zines in the Classroom."
Zines and other alternative and underground publications can be used as teaching tools for learners from kindergarten to college. There are zines on just about any topic you can think of, from feminism to sports to politics to cooking. When choosing zines for use in your classroom, think carefully about your student's reading level and the subject matter of the zine. Let students explore zines and their history, and you can teach just about anything, including: English Language Arts, Media Literacy, Art, Social Science and History and even Math and Science!

Lesson Plans
(to be used in conjunction with Barnard's Election and Protest online exhibit)
The following lesson plans were developed for three different levels of ability, but each lesson plan could be used in any classroom with the appropriate modifications. Select the lesson plan that best fits your students, or download all three and create your own unit to suit your needs. Each lesson plan was originally developed by Melissa L. Jones, MS Ed, MS LIS, based on her expertise as a public school educator.

Lesson A - What is a zine? What is the value of protest?
Content Areas: English Language Arts, Information Literacy
Level: Intermediate, Grades 7-9

Lesson B - Why zines? How can those outside the mainstream get their voices heard?
Content Areas: Media Literacy, Information Literacy
Level: Secondary, Grades 10-12

Lesson C - How do systems of power repress voices of dissent?
Content Areas: English, History, Political Science, Information Literacy
Level: 12th Grade or Early College

Suggested Resources

Books

Articles
Congdon, Kristin G. and Doug Blandy. "Using Zines to Teach about Postmodernism and the Communication of Ideas." Art Education. (May 2003).
Daly, Brenda O. "Taking whiteness personally: Learning to teach testimonial reading and writing in the college literature classroom." Pedagogy. vol 5 no. 2 (Spring 2005): p 213-246.

Web Resources

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Writing Tip of the Month: Meeting Gen Ed writing requirements: The THINK TANK can help!

With large numbers of students enrolled in General Education courses, it can be difficult for instructors to have the one-on-one interactions with each student that will help them to really improve their writing. Fortunately, the Writing Center and Writing Specialist at the THINK TANK can help ease the burden on instructors and provide individual guidance and feedback to students.

One-on-One Tutor Time

The Writing Center offers free, drop-in writing tutoring in three campus locations and online. Students can stop by during open hours for a 15-minute session with a tutor, or make a free, 30-minute appointment (https://thinktank.arizona.edu/scheduling).

Tutors work with students at any point in the writing process, from brainstorming topics to final edits. They provide signed and dated Proof of Visit slips to tutees upon request, so students can fulfill any expectations from their instructors regarding spending a designated amount of time working with a tutor on their assignments. Consider assigning a specific task for students to tackle with a tutor, such as refining a thesis statement or strengthening the supporting evidence for their argument. Students should always bring assignment sheets/instructions and any grading rubrics/expectations to the Writing Center so tutors can ensure that they guide students toward meeting the assigned requirements. You can also send these documents to the Writing Specialist to share with tutors.

Learn more about the Writing Center and find the drop-in and appointment schedule on the website: http://thinktank.arizona.edu/writing-center. To discuss tutoring for your students contact Laura Everett, Tutoring Services Coordinator: laela@email.arizona.edu or 520-626-1923.

Supporting Your Instruction

The THINK TANK’s Writing Specialist, Chris Hamel-Brown, works with instructors and teaching assistants to develop effective assignments and streamline the paper grading workload. Chris can assist as you develop a writing assignment to ensure that your learning objectives will be articulated and met in a way that is efficient for both writers and graders. She can help you develop grading rubrics that ease the grading process and ensure consistent scoring and feedback for all students. She can also provide assignment- or skill-specific workshops and activities to guide students as they begin and develop their writing projects.

For more information about these customized services, contact Chris Hamel-Brown: chamel@email.arizona.edu or 520-626-1952.

A bit more of history...

On Oct. 1, 1891, The University of Arizona opened its doors.

When the school bell rang that first day of class, Tucson celebrated.

Thirty-two students enrolled for the first semester but only six were admitted to the freshman class. The rest went to a specially established prep school. The problem was there were no high schools in the territory. It took seventeen years for university students to outnumber those in the prep classes. The University maintained the preparatory classes for twenty-three years.

How about student life during those years? The students rode their cow ponies to school and tied them to hitching posts near Old Main. Discipline was strict. Running on the balcony of Old Main cost the offending student 10 demerits. In 1892, the dean of students asked the Board of Regents to prohibit the use of firearms on campus. And if a student's class work wasn't going well the problem was immediately taken up by the entire faculty and his parents were called in for a conference.

We welcome ideas and questions for articles and resources. To submit ideas or for more information on resources email Elaine Marchello at evm@email.arizona.edu