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Volume 6, No. 9
September 2018

The principal goal of education is to create individuals who are capable of doing new things, not simply of repeating what other generations have done." – Jean Piaget

Cognitive Learning Concepts for Teaching

Earlier this month we were joined by Todd Zakrajsek, PhD for our TEACH Education Grand Rounds series. Dr. Zakrajsek started his talk by paralleling the act of story-telling with lecture as a teaching strategy. However, while story-telling is an enduring centuries old teaching method that has been shown to be an effective means of sharing and retaining information, recent press on lecturing has not been nearly as positive. In fact, lecturing in higher education has become taboo.

Dr. Zakrajsek's enthusiastic and energetic lecture emphasized that it may not be so much the teaching strategy as much as how that strategy is implemented that makes it effective or ineffective for learning. He suggested using concepts of cognitive learning and blending strategies for a most effective approach. For this issue of FREE, we will recap some of the cognitive concepts that Dr. Zakrajsek presented that may be useful to our teaching community as we examine our own teaching methods. Below are some key concepts of cognitive learning that will be helpful for engaging our learners and ensuring meaningful learning experiences.

- **Cognitive Load:** Awareness of three types of cognitive load are essential for successful learning. Intrinsic load is the inherent difficulty or complexity of the information to be learned. Germane load is devoted to processing information and constructing schemas to connect information. Any demand placed on a learner unrelated to the information to be is considered extraneous load which we should do our best to mitigate for our learners during teaching.
- **Multitasking vs. Task Shifting:** Contrary to popular belief, we can all multitask. Walking while talking is a simplistic example of this concept. Walking and casually talking are two tasks that are not cognitively demanding which allows our brains to easily handle both activities simultaneously. When one maxes out their cognitive load with multiple activities, they move from multitasking to task shifting without always being aware. Task shifting should be avoided to allow learners to focus on one cognitively demanding activity at a time.
- **Memory:** Memory can be categorized into three groups. Sensory memory is comprised of all sensations that one experiences on a daily basis. Working memory has limited capacity and the ability to hold information for a short time. Working memory is the ability of our brains to keep a limited amount of information available long enough to use it. Long-term memory has unlimited capacity and allows us to store and retrieve processed information. In order for successful learning and retention to take place, information has to move from the sensory or the short-term memory to the long-term memory. Working memory must be engaged during learning to move critical concepts to long-term memory.
- **Critical Components of Learning:** According to Dr. Zakrajsek, the following elements are critical for effective learning to take place. These elements are necessary regardless of the type of learning strategy (lectures, active learning, group work, etc.) being implemented.
 1. Attention
 2. Understanding
 3. Value/Interest
 4. Repetition – how we keep things in our head
 5. Elaboration to tie to schema
 6. Learners have a belief they can learn

As we know, there are many different approaches to teaching, but what we first must understand are the underlying cognitive learning concepts that make teaching successful. Incorporating a variety of teaching modalities is important for fostering learning but most importantly is that they are done well and address the key cognitive areas for learning. This article provided a brief overview of what Dr. Zakrajsek covered in his presentation. To view his video-taped presentation and to learn more, visit the TEACH website (<https://www.teach.vtc.vt.edu/education-grand-rounds-videos/>).

-Mariah Rudd



Dean's Corner

Cynda Johnson, MD, MBA

Recently I began a three-year term as Liaison to the Council on Medical Education of the American Medical Association. I'm particularly excited about this appointment because it was only recently that the AMA added medical education as one of its three top funded priorities. The organization traditionally focused on topics related to managing medical practices and delivering health care. To add a greater focus on medical education shows the organization's acknowledgement of the critical nature of educating medical students in this changing healthcare environment.

Like many professional organizations, the AMA has its roots from the ground up. The Roanoke Valley Academy of Medicine is its local organization, and the Medical Society of Virginia serves as the state association. I'm proud that many of our students choose to become involved in these organizations, serving as leaders in the student chapter of MSV and participating in AMA national events. In October, we will welcome the Medical Society of Virginia to VTCSOM and The Hotel Roanoke for its annual meeting.

Over the course of my career, I've been involved in dozens of professional organizations and held numerous offices at the regional, state, and national levels. The internet's 4CBlog lists 10 reasons to belong to a professional organization. I'd like to speak briefly, from personal experience, about several of them:

- Broadening your knowledge – I always learn something new when I participate in activities related to professional organizations. My knowledge base is expanded, and I bring home ideas that many times translate into a new and better way of doing things.
- Being a leader – Being part of professional organizations allows us to have more influence, especially as we take on positions that require us to dig deep and develop leadership skills across the board.
- Mentoring – Some of my richest, most meaningful relationships are the result of either mentoring or being mentored in a professional organization. Endless networking opportunities enable acquaintances to blossom into professional friends.

Of course there are many more advantages. I encourage each of you to stay connected, motivated, and inspired through your professional organizations.