How Learning Works: 7 Research-Based Principles for Smart Teaching

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Abstract/Objectives

A tenet of learner-centered teaching is that learning is the litmus test of any pedagogy. Therefore, one of the most important contributions educational developers can offer is to explain the learning process to instructors. This interactive workshop is based on the book "How Learning Works: Seven Research-Based Principles for Smart Teaching," which synthesizes 50 years of research on learning from the cognitive, motivational, and developmental perspectives into seven integrated principles (Ambrose et al. 2010). The principles highlight how prior knowledge, the organization of knowledge, motivation, practice, feedback, developmental issues, classroom climate, and metacognitive skills can all facilitate learning–or hinder it.

Following this workshop, participants will be able to:

1. List and discuss the seven principles of learning
2. Describe the supporting research and evidence
3. Facilitate experiential activities to highlight each principle
4. Generate pedagogical strategies to support learning

The workshop is based on the book I co-authored, titled "How Learning Works: 7 Research Based Principles for Smart Teaching" (Ambrose et al. 2010). The book organizes the various strands of the literature on learning (from cognitive, developmental, and motivational psychology, education, diversity and inclusion studies, organizational behavior and group learning etc) into 7 interrelated principles:

1. Students' prior knowledge can help or hinder learning.
2. How students organize knowledge influences how they learn and apply what they know.
3. Students' motivation determines, directs, and sustains what they do to learn.
4. To develop mastery, students must acquire component skills, practice integrating them, and know when to apply what they have learned.
5. Goal-directed practice coupled with targeted feedback enhances the quality of students' learning.
6. Students' current level of development interacts with the social, emotional, and intellectual climate of the course to impact learning.
7. To become self-directed learners, students must learn to monitor and adjust their approaches to learning.

Each principle is based on dozens of research studies (see a few references below).

The workshop is also based on the companion website to the book, "Solve a Teaching Problem," winner of the POD Innovation award (http://www.cmu.edu/teaching/solveproblem/index.html). The last part of the workshop (applying the 7 principles to faculty-as-learners in our consultations) is based on DiPietro & Norman (2013).

Design

The workshop combines theory and practice. We will start with a small group activity asking participants to define learning, and debriefing those definitions together. We will then introduce the 7 principles, tying them to parts of the various definitions. For every principle, we will start with an activity that underscore the far-reaching implications it can have on learning. We will then highlight the underlying research, and collaboratively generate pedagogical implications. We will spend about 15-20 minutes on each principle, leaving ample time to debrief how participants can use the activities in workshops on campus, adapt them for particular audiences etc.

Some of the activities we will use are reflective exercises (such as recalling particularly (de)motivating educational experiences), discussions of case studies that highlight some learning roadblocks, a developmental game (Reimers and Roberson 2002) to underscore the role of intellectual development, planning exercises to highlight the complexities of metacognition, and reenactments of landmark psychology experiments (e.g., the Stroop effect (1935) to highlight the role of automaticity in the development of mastery, chunking experiments to highlight the interaction between working memory and long-term memory, stereotype threat activations (Steele and Aronson 1995) that highlight the role of disruptive emotions on performance, Bransford and Johnson's (1972) experiments on the role of organizing schema in meaning-making etc).

We will end by noting that the faculty we work with are, in a sense, learners, and therefore the 7 principles apply to them as well. The concluding discussion will center on how we can use the 7 principles in our consultations with faculty, thus being a synthesis activity to consolidate all the learning in the workshop.

75 word advertising text

A solid understanding of the learning process is essential to respond to the enormous global changes in higher education. This interactive workshop, based on the book "How Learning Works: 7 Research-Based Principles for Smart Teaching," will synthesize 50 years of research on learning into seven integrated principles (Ambrose et al. 2010). The principles highlight how prior knowledge, the organization of knowledge, motivation, practice, feedback, developmental issues, classroom climate, and metacognitive skills facilitate or hinder learning.

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