

Book Review

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

By: Susan A. Ambrose, Michael W. Bridges, Marsha C. Lovett, Michele DiPietro, and Marie K. Norman.

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In *How Learning Works: Seven Research Based Principles for Smart Learning*, educators Susan Ambrose, Michael Bridges, Marsha Lovett, Michelle DiPietro, and Marie Norman, set out to examine how students learn and how the principles of learning theory can be realistically applied in the college classroom. Ambrose et al. center their discussion around seven principles that are paramount for student success. Each chapter of the book focuses on a specific principle and provides research based strategies for how to apply that principle in the classroom.

In Chapters 1-2 Ambrose et al. examine the effect of students' prior knowledge and organization of information on learning. In their chapter on the importance of prior knowledge, the authors note that prior knowledge can either help or hurt future knowledge. The authors emphasize the importance of assessing and ultimately activating prior knowledge so that new knowledge can form. In Chapter 2, Ambrose et al. focus on the way information is organized. The authors point out that in order for learning to occur students must be able to organize information in a way that is both structured and retrievable. Ambrose et al. suggest that in order for instructors to aid students in organizing information, it is important that they provide organizing schemes initially, and then learn to monitor the ways in which students process information to ensure that it is being organized effectively.

In Chapter 3-4 of *How Learning Works*, Ambrose et al. discuss the importance of motivation to the ability to learn new information as well as the concept of

mastery. In Chapter 4, the authors examine the factors that influence motivation, including: goals, values, and expectancies, and then discuss ways in which instructors can increase and improve motivation in the classroom. Ambrose et al. provide a number of specific strategies to establish value and build positive expectancies. Some of these suggestions include showing relevance to students' current academic lives, demonstrating the relevance of higher-level skills to students' future professional lives, and creating assignments that provide the appropriate level of challenge. In their discussion of mastery, Ambrose et al. identify three specific elements that are required in order for a student to gain mastery in a specific field: (1) students must acquire component skills, (2) students must have the opportunity to practice integrating component skills, and (3) students must know when to apply what they have learned. Ambrose et al. provide several strategies that target component skills, integration of skills learned, and the ability to transfer learned information to differing contexts.

In the next section of the book (Chapters 5-6) Ambrose et al. look at the importance of feedback and class climate to learning success. In Chapter 5, the authors look at what kinds of feedback is appropriate and constructive in the learning process. Ambrose et al. note that the key to success is combining targeted feedback with goal-directed practice. More specifically, Ambrose et al. identify three elements to effective feedback: (1) it focuses students on the key skills and knowledge that needs to be learned (2) it is provided at a time and frequency when students will be most likely to use it, and (3) it is linked to additional practice opportunities for students (Ambrose et al. 143). Finally, the authors look at the importance of student development and course climate as they help or hinder learning. Ambrose et al. suggest that students' development interact with the social, emotional, and intellectual climate of the course to impact learning (Ambrose et al. 158). In their discussion of student development, the authors look at the Chickering Model of Student Development which identifies a number of components including: developing competence, managing emotions, developing autonomy, and establishing identity. Ambrose et al. then discuss the various types of course climate,

including explicitly marginalizing, implicitly marginalizing, implicitly centralizing, and explicitly centralizing. Ambrose et al. also look at tone, faculty-student interaction and content in their discussion of course climate.

In the final section of the book, Ambrose et al. examine the ways in which students can become self-directed learners and conclude with a discussion of the ways in which instructors can apply the seven principles to their own teaching methods. In their discussion of how students become self-directed learners, Ambrose et al. mention five separate skills that must be mastered: (1) students must learn to assess the demands of the task, (2) students must learn to evaluate their own knowledge and skills, (3) students must plan their approach (4) students must monitor their progress; and (5) they must learn to adjust their strategies as needed. In their conclusion, Ambrose et al. identify the seven principles (prior knowledge, organization, motivation, mastery, practice and feedback, development and climate, and self-directed learning) and discuss the ways in which instructors must examine how these principles impact their own abilities to teach and learn. The book includes eight appendices that provides examples of a student-self-assessment, a concept map, a rubric, learning objectives, and ground rules, among other tools.

How Learning Works is an essential read for educators in the college setting. The research-based principles provided in this book lay an excellent foundation understanding how students learn. Ambrose et al. have designed each chapter to address the learning principles outlined as well as provide specific and targeted strategies for implementation in the classroom.