

Principles of Learning

A solid foundation in the principles and practices of how learning works is essential before planning a course. Lovett, M. C. et al. (2023) offer the following* set of evidence-based principles, which serve as a useful starting point for building that foundation.

	Principle	Implications	Getting Started
1	Students differ from each other in multiple dimensions (identities, stages of development, and personal histories). These differences influence how they experience the world and, in turn, their learning and performance	The pedagogical strategies we employ in the classroom should enable multiple ways for students to engage and reflect an understanding of social identity and intellectual development. We should anticipate possible tensions and take proactive steps to address them.	• Broaden the curriculum to include theories, research, readings, etc., which are not typically included • Encourage students to share their experiences • Incorporate principles of Universal Design for Learning (UDL)
2	Students' prior knowledge can help or hinder learning	Students learn more readily when they can connect what they are learning to what they already know. Students do not automatically draw on their prior knowledge. Knowing 'what' is different from knowing 'how' or 'when.' It's important to assess prior knowledge as a starting point for planning teaching.	• Have students assess their own prior knowledge • Use brainstorming to reveal prior knowledge • Explicitly link new material to prior knowledge gained in your own course
3	How students organize knowledge influences how they learn and apply what they know	As experts in our domain, we may organize our knowledge differently from the way our students do. We need to provide them with appropriate organizing schemes or teach them how to identify relevant principles in what they are learning. We also need to monitor how students process learning to ensure it's organized in useful ways.	• Provide and explain the rationale for the organization of your course • Explicitly state the connections between concepts • Ask students to draw a concept map to demonstrate how they are organizing knowledge

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4	Students' motivation determines, directs, and sustains what they do to learn	Several factors influence student motivation. Ensuring students see the value in what they are being asked to learn/do and making sure the learning environment is supportive will go a long way to supporting student motivation.	• Provide authentic tasks and explicitly explain their relevance to students' lives • Ensure learning objectives, assessments, and instructional strategies align • Ensure activities and assessments are at the appropriate level of challenge and provide opportunities for success early on
5	To develop mastery, students must acquire component skills, practice integrating them, and know when to apply what they have learned	We should employ instructional strategies that reinforce a robust understanding of deep structures and underlying principles and provide sufficiently diverse contexts in which to apply these principles. It's important to help students make appropriate connections between the knowledge and skills they possess and new contexts in which those skills apply.	• Decompose complex tasks • Make sure students know where to focus their attention • Provide practice opportunities specifically designed to increase competence
6	Goal-directed practice, coupled with targeted feedback, is critical to learning	The more class time spent on active learning strategies, the better. Maintaining their practice at an appropriate and productive level of challenge is important. Feedback ideally should focus on the key knowledge and skills students are required to learn, provided at a time and frequency when students are most likely to use it, and be linked to further opportunities for practice.	• Ensure your course learning objectives are made explicit in your course materials • Include multiple opportunities for practice • Use scaffolded assignments that allow for multiple opportunities for feedback
7	The classroom environment we create can profoundly affect students' learning, positively or negatively	Effective teaching requires that we give the same consideration to social and emotional dynamics in the classroom as we do to intellectual processes, as the former affects the latter. Instructors have a huge influence over the classroom climate. Reflecting on the 'what' and 'how' of	• Ensure your course outline sets an inclusive tone and use this as a tool for fostering belonging and connection

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7		what we do is important to mitigating the possibility of our decisions negatively impacting the learning environment.	• Co-create with students guidelines for interaction • Provide opportunities for anonymous feedback
8	To become self-directed learners, students must learn to monitor and adjust their approaches to learning	Research indicates students tend not to use metacognitive skills as often as they should. Students may need support in consistently applying these skills effectively.	• Make planning an integral step in assessments • Require students to reflect on and annotate their own work • Prompt students to reflect on the study strategies they use and the effectiveness of these strategies

*Text above adapted from Lovette, M. C., Bridges, M. W., DiPietro, M., Ambrose, S. A., & Norman, M. K. (2023). How learning works: 8 researched-based principles for smart teaching. 2nd Edition. JOSSEY-BASS-A Wiley Brand.