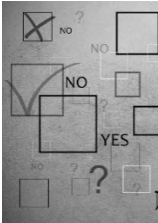


Cognitive Principles of Learning

The following learning strategies strengthens understanding and improves long-term retention of content, concepts, and skills:



Retrieval Practice involves frequently retrieving the to-be-remembered information through low-stakes “testing” or quizzing.

Ways to implement it: Give regular, low-stakes quizzes and cumulative exams; ask students to recall—through writing or drawing—everything they learned during the last meeting; use student response systems; give students practice tests; have students create flashcards and ensure they recall concepts in addition to terms or definitions.



Spaced Practice involves braking up learning into a number of short sessions, over a longer period of time.

Ways to implement it: At the start of class, review previous material, or ask students to summarize the last lecture or the lecture on X; give more shorter assignments rather than relying solely on mid-term and final exams; space assignments.



Interleaving involves mixing different together different concepts rather than focusing exclusively on one.

Ways to implement it: Include “old” concepts/problems with new material, quizzes, and tests; make exams, especially final exams cumulative; ask students to make connections to previous material.



Elaboration involves explaining and describing ideas in detail and connecting content to other ideas and your own experiences, memories, and day-to-day life.

Ways to implement it: Ask students to explain a concept in their own words, draw a concept map, sketch their notes, or teach difficult concepts to someone not in the class; have students develop analogies, visual metaphors, or come up with their own examples; have them write marginal comments when they read.

Want to learn more? Check out *Make It Stick* by Brown, Roediger, and McDaniel (2014).

Affective Principles of Learning

The following principles and strategies can help you leverage the affective dimension of learning:



“Psychosocial Moratorium” Principle involves allowing learners to take risks in a space where real-world consequences are lowered.

Ways to implement it: Build supportive community; share and model how you learn from mistakes; frequent low-stakes assignment; in high-stakes assignments, allow revisions, re-writes, meta-cognitive reflection on errors to earn back lost points.



Situated, Embodied Meaning Principle involves recognizing that meanings of signs (words, actions, objects, artifacts, symbols, texts, etc.) are situated in embodied experience; they are not general or decontextualized.

Ways to implement it: Create immersive learning environments that simulate authentic tasks appropriate to your discipline through role plays, hands-on experiments, interviews, simulations; ask students to reflect on and make meaning of their experience.



Affinity Groups consist of learners that are bonded primarily through shared endeavors, goals, and practices and not shared race, gender, nation, ethnicity, or culture.

Ways to implement it: Communicate idea of collective journey and shared responsibility; convey that diversity is valued; present inclusive content and role models from diverse groups; co-create class etiquette, evaluation criteria, assignments; offer opportunities for out-of-class engagement through blogging, field trips, group projects, presentations, etc.



Identity Principle involves allowing the learner to take on and play with identities in such a way that she has real choice; fostering a sense of belonging.

Ways to implement it: Ask students to share goals for taking your course; give choices for projects or paper topics based on individual interests; through blogs/e-portfolios provide opportunities for regular reflection on the connections between personal goals, skills, and content learned; communicate high expectations and confidence that they can be met; normalize hardship and doubt about social belonging.

Want to learn more? Check out *What Video Games Have to Teach Us About Learning and Literacy* by James Paul Gee (2007).