Study Habits

CIRTL: Improving Teaching with Psychology

Why Focus on Study Habits?

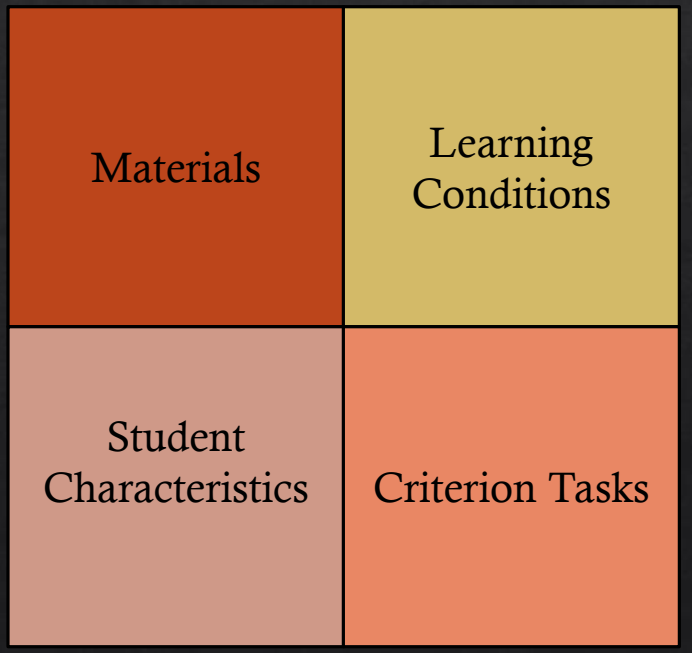
- Students may not know the best practices
- If we can tell students how to improve their studying, they will do better in our classes
- Cognitive psychology
  - Many study habits have been shown to be effective
  - Others have been shown to be ineffective

Learning Techniques

- Dunlosky et al. (2013) investigated 10 learning techniques:

1. Elaborative interrogation
2. Self-explanation
3. Summarization
4. Highlighting (or underlining)
5. Keyword mnemonic
6. Imagery us for text learning
7. Rereading
8. Practice testing
9. Distributed practice
10. Interleaved practice

Evaluated on 4 categories



Dunlosky et al. (2013). Improving students' learning with effective learning techniques: Promising directions from cognitive and educational psychology. *Psychological Science in the Public Interest, 14(1)*, 4-58.

Learning Techniques

Technique	Description
1. Elaborative interrogation	Generating an explanation for why an explicitly stated fact or concept is true
2. Self-explanation	Explaining how new information is related to known information, or explaining steps taken during problem solving
3. Summarization	Writing summaries (of various lengths) of to-be-learned texts
4. Highlighting/underlining	Marking potentially important portions of to-be-learned materials while reading
5. Keyword mnemonic	Using keywords and mental imagery to associate verbal materials
6. Imagery for text	Attempting to form mental images of text materials while reading or listening
7. Rereading	Restudying text material again after an initial reading
8. Practice testing	Self-testing or taking practice tests over to-be-learned material
9. Distributed practice	Implementing a schedule of practice that spreads out study activities over time
10. Interleaved practice	Implementing a schedule of practice that mixes different kinds of problems, or a schedule of study that mixes different kinds of material, within a single study session

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Learning Techniques

Materials	Learning conditions	Student characteristics[a]	Criterion tasks
Vocabulary	Amount of practice (dosage)	Age	Cued recall
Translation equivalents	Open- vs. closed-book practice	Prior domain knowledge	Free recall
Lecture content	Reading vs. listening	Working memory capacity	Recognition
Science definitions	Incidental vs. intentional learning	Verbal ability	Problem solving
Narrative texts	Direct instruction	Interests	Argument development
Expository texts	Discovery learning	Fluid intelligence	Essay writing
Mathematical concepts	Rereading lags[b]	Motivation	Creation of portfolios
Maps	Kind of practice tests[c]	Prior achievement	Achievement tests
Diagrams	Group vs. individual learning	Self-efficacy	Classroom quizzes

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Learning Techniques

Technique	Utility	Learners	Materials	Criterion tasks	Issues for implementation	Educational contexts
Elaborative interrogation	Moderate	P-I	P	I	P	I
Self-explanation	Moderate	P-I	P	P-I	Q	I
Summarization	Low	Q	P-I	Q	Q	I
Highlighting	Low	Q	Q	N	P	N
The keyword mnemonic	Low	Q	Q	Q-I	Q	Q-I
Imagery use for text learning	Low	Q	Q	Q-I	P	I
Rereading	Low	I	P	Q-I	P	I
Practice testing	High	P-I	P	P	P	P
Distributed practice	High	P-I	P	P-I	P	P-I
Interleaved practice	Moderate	I	Q	P-I	P	P-I

P- positive rating (recommend to students and teachers)

N- negative rating (don't recommend)

Q- qualified rating (positive effects under some conditions but not others)

I- insufficient evidence (more research is needed)

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Optimizing Learning in College

- Starting the Semester
  - Organize your time
  - Buy or rent your books before the course
  - Find a quiet place to study
- Preparing for Each Class
  - Answer comprehension questions before you read the assigned chapter
  - Generate questions about the important points
  - Read, recite, and review
- During Class
  - Attend all your lectures
  - Leave your laptop at home
  - Write your notes instead of typing them
  - Obtain slides before class
- After Class
  - Go through and elaborate on your lecture notes

Putnam et al. (2016). Optimizing Learning in college: Tips from cognitive psychology. *Perspectives on Psychological Science, 11(5)*, 652-660.

Optimizing Learning in College

- Preparing for Tests
  - Study each subject a little bit every day
  - Study by quizzing yourself
  - A few other test preparation tips
    - Successive relearning (spaced testing, until you can recall info my memory)
    - Mnemonics
- The Final Exam
  - For cumulative exams: spaced practice and retrieval throughout the semester
  - Begin studying far in advance
- Maintaining a healthy lifestyle is also important

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Table 1. Summary of Strategies for Optimizing Learning in College

Space out your learning.

- Study for a little bit every day, rather than cramming in one long session.
- Start studying early, and touch on each topic during each study session.
- Reading before class and reviewing lecture notes after class will help consolidate what was covered in class.

Learn more by testing yourself.

- Instead of writing a chapter summary as you read, write down what you remember after you read, recalling the details from memory. Then, check to see how well you did (the read-recite-review method).
- Answer the "end-of-chapter" questions both before and after you read a chapter.
- Use flash cards to learn key vocabulary. Retrieve the idea from memory (before looking at the answer) and use a larger (rather than a smaller) stack of cards. Put answers you missed back in the deck at an early place and the ones you got right at the end. Finally, aim to recall each item correctly multiple times before taking a card out of the deck.
- Be skeptical about what you think you know—testing yourself can provide a better picture about which concepts you know well and which you might need to study further.

Get the most out of your class sessions.

- Attend every class session.
- Stay focused during class by leaving your laptop at home; you'll avoid distracting yourself and your classmates, and you may remember more by taking notes by hand.
- Ask your professor for a copy of any PowerPoint slides before class, so that you can take notes directly on the slide handout.

Be an active reader.

- Instead of speeding through your reading, slow down and aim for understanding.
- Ask yourself questions as you read, such as, "What did I learn on this page?" and "What on this page is new to me?"
- Finally, write some of your own questions about tricky concepts: "What is an example of *X* in real life?" or "How is Theory *X* different from Theory *Z*?"

Other general tips.

- Get organized early in the semester: Put major due dates and exams on your calendar, set reminders to get start studying early, and be sure to look at your calendar at least once a week so you can plan ahead.
- Get some exercise. Going for a 50-min walk in nature can enhance your ability to focus on difficult tasks.
- Sleep! Sleeping is critical for ensuring that memories are successfully stored in long-term memory.

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Ideas?