Teaching Students How to Succeed in Your Course **March 10, 2023**
CTL Journal Club

Part I. Which of the following study strategies do you think:

(a) are most effective? (circle these)
(b) students use most frequently? (box these)

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. **Condensing/summarizing**- 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/rewatching**- Restudying text material again after initially reading a text or after initially watching a video/lecture

8. **Practice testing**- Self-testing or taking practice tests over to-be-learned material

9. **Distributed practice / spacing**- 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

11. **Visualize course content**- Make diagrams, charts or pictures to organize information and ideas

12. **Study with classmates**

13. **Study lots of information the night before the test**

14. **Use flashcards**

15. **Other:**

Part II. Studying FAQ adapted from: Clara L. Meaders *et al*. "What Questions Are on the Minds of STEM Undergraduate Students and How Can They Be Addressed?" *Frontiers in education (Lausanne)* 6 (2021).

- Would you consider providing something like this (tailored for your class) to your students? Do you think it could help? Why or why not?

Student Q: How do I study?
Faculty A: Learn the material so that you can teach the material. Explain concepts to a friend/classmate- you figure out what you do and do not know when you try explaining that information verbally to others.

Student Q: How often do I study?
Faculty A: To effectively study for the course, try to study everyday for a smaller chunk of time rather than studying for long hours in a single day. It is not enough to go to lecture and solve problems the weekend before the test, you need to be problem solving every day.

Student Q: How do I study in groups?
Faculty A: Prior to working together, make your own personal 'study guide' and then get together and compare them with other students. During a session, teach each other the material in a group. Present big concepts, practice the worksheets/handouts/problem sets given out during class. Make sure you don't give each other the answers, but aid and help one another to get to the answers together.

Student Q: What do I ask instructors?
Faculty A: If you keep missing a certain question, come in and get help. If you miss any questions on posted practice exams, come in and get help. Do not be afraid to ask questions – even if your first question is that I am not sure what to ask.

Student Q: How many hours per week should I study?
Faculty A: On average 2-3 h of external work for every 1 instructional hour or credit. Here is an example: 30 min of review and preparation for lecture before class, 2-3 h for every homework assignment or for worksheets, and 2 h per week for reading.

Student Q: How do I set up a weekly rhythm and plan for the academic year?
Faculty A: Get a planner and PLAN AHEAD. Plan not just the submission dates and class times but also the study times - schedule all the time you will spend in the course and also on other things.
Faculty A: Balance out the work - the pace can change and sometimes material gets harder. Keep some buffer time to expand into it as needed.
Faculty A: Try to make progress daily, to keep current with ideas and assignments. Use weekends to make progress on big goals, like projects or studying for assessments.

Student Q: What should I do on a day-by-day basis?
Faculty A: After every lecture, spend time reviewing the material (short-term memory is strong within

24 h).
Faculty A: Look at the upcoming topic to brush up on skills you may need to know in advance to understand the topic, pay attention during the topic, ask questions and then work on the concepts afterward to clarify what you missed.

Student Q: Do you have any general time management advice?
Faculty A: Establish routines. Plan to study during the times of day that you are most alert. Make sure to get enough sleep.
Faculty A: Treat your study time like a job. It can be easy to get distracted in a new university environment. All those instances of saying "I will just skip it this one time" can add up. If you set and stick to your schedule, you will accomplish more. Furthermore, if you finish early, your free time will feel more liberating!"

Student Q: How should I take notes?
Faculty A: Synthesize notes in your own words. If slides are provided to students, focus on annotating additional topics emphasized verbally. For discussion-based courses, write down summaries of discussions and the main points that are made.

Student Q: How can I minimize distractions in class?
Faculty A: Putting your phone away, letting people know that having your phone stowed away or setting it to "do not disturb" so that it is not tempting as a distraction, don't read text messages.

Student Q: How do I come to class prepared?
Faculty A: For courses that post notes ahead of time, the intent is that you would print these out and take notes on that so you're not trying to scramble and write down the already prepared diagram.

Student Q: How do I stay engaged or refocus if I get off track during class?
Faculty A: Sit toward the front of the class.
Faculty A: Take care of yourself: Bring water and a snack to class. Stay well-rested.
Faculty A: If you find yourself getting unfocused on the activity at hand, it always helps to start writing/ journaling what is happening in the class - it brings the focus back and helps you refer to it later.

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From a FAQ that Marty has used before:
Q: How do I study in groups?
A: Form a study group of 3-6 classmates/friends. Divide up the course content across your study group, such that if you have a group of 5 classmates, each is responsible for ⅕ of the material covered in a test. Each person should become an expert on the topics that they are assigned, and they should teach it to their study group, including how to solve some relevant example problems (including the hardest homework or in-class questions from the week these topics were covered to make sure everyone knows how to do them).

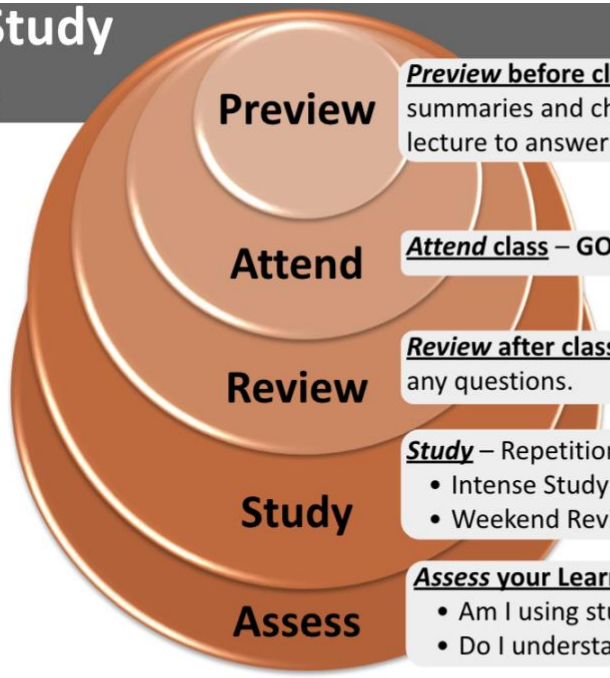
Give each group member a few days to prepare, and then meet so that everyone can teach each other. Keep a record of all the questions that come up that you can't answer yourselves, and bring those questions to office hours or review sessions to ask your TAs or faculty before the exam.

Q: How do I use a practice exam?

A: Take a practice exam as if it were a real exam, using the same time constraints of the real exam (ie, give yourself 60 minutes if it will be a 60 minute exam in real life). Then open the answer key and grade yourself (or better yet, swap practice exams with a classmate and grade each other's exams). Go to office hours or review sessions with any questions you have to ask your TAs or faculty.

One can use the practice exam as a diagnostic tool to help you identify what you need to study (if you take the practice exam before you start studying), *or* you can take it as a tool to "practice taking exam dry-run" to help you feel more comfortable and confident and lower your stress and anxiety before you take the actual test.

The Study Cycle



***Preview* before class** – Skim the chapter, note headings and boldface words, review summaries and chapter objectives, and come up with questions you'd like the lecture to answer for you.

***Attend* class** – **GO TO CLASS!** Answer and ask questions and take meaningful notes.

***Review* after class** – As soon after class as possible, read notes, fill in gaps and note any questions.

Study – Repetition is the key. Ask questions such as "why", "how", and "what if".
- Intense Study Sessions* – 3-5 short study sessions per day
- Weekend Review – Read notes and material from the week to make connections

***Assess* your Learning** – Periodically perform reality checks
- Am I using study methods that are effective?
- Do I understand the material enough to teach it to others?

*Intense Study Sessions

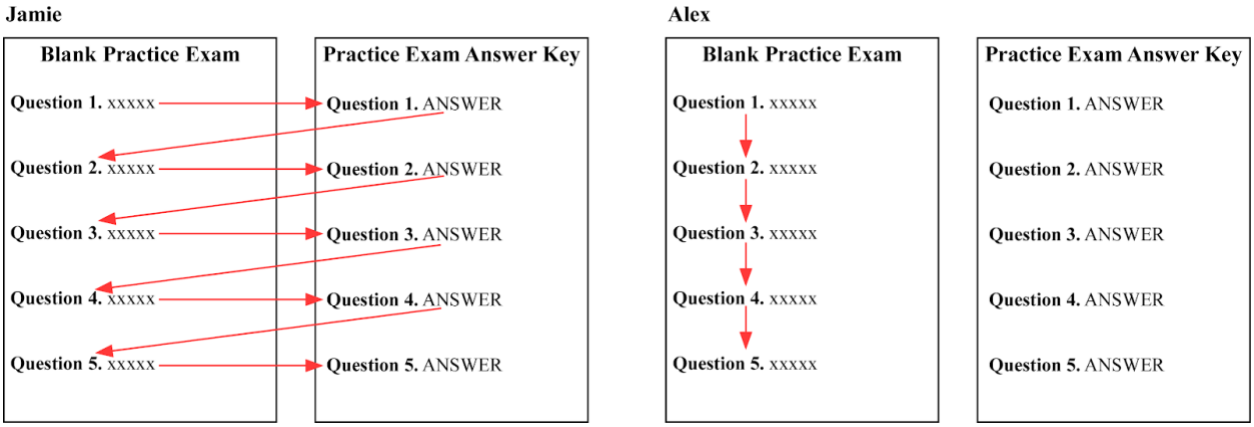
1	**Set a Goal**	(1-2 min)	**Decide what you want to accomplish in your study session.**
2	**Study with Focus**	(30-50 min)	**Interact with material-** organize, concept map, summarize, process, re-read, fill-in notes, reflect, etc.
3	**Reward Yourself**	(10-15 min)	**Take a break**– call a friend, play a short game, get a snack
4	**Review**	(5 min)	**Go over what you just studied**

Part IV. Developing activities to teach your students how to study (for example):

- Might either of the examples below be useful for you or your TAs to use? Would there be other kinds of activities you'd want to use instead?

A. How to study using a practice exam

Jamie and Alex are two students studying for an exam, using the blank practice exam and answer key provided by the course. Both Jamie and Alex give themselves only 90 minutes to complete the blank practice exam, as recommended by their instructors and TFs. However, whereas Jamie looks at the answer key for confirmation after each question while taking the practice exam, Alex does all the questions on the practice exam in 90 minutes without looking at the answer key until the 90 minutes are over (as shown below).



Do you think Jamie or Alex is studying more effectively for their exam? Briefly explain your reasoning.

B. Self-testing vs rereading

Ref: Science 11 Feb 2011:Vol. 331, Issue 6018, pp. 772-775, DOI: 10.1126/science.1199327

Subjects 80 undergraduates.

Learning Material A prose passage (275 words in length) on a single scientific topic ("Sea Otters") with 30 idea units/concepts.

Learning process **S** or **T** represents 7-min of time, *D* is 2-min of a distractor task.

Group1: **S** **S**tudy the passage for the first and only time

Group 2: **S** - *D* - **S** - *D* - **S** - *D* - **S**
Study the passage for the first time, then re**s**tudy three more times.

Group 3: **S** - *D* - **T** - *D* - **S** - *D* - **T**
Study the passage for the first time, take a **t**est, then re**s**tudy, and take another **t**est.
The tests are **free-recall tests** (write down on a blank sheet as much of the material from the passage as they could remember).

After 1 week, students are tested with questions on the passage, some of which assess conceptual knowledge stated directly in the text and others require students to connect multiple concepts from the text. **Which student group do you think retained the material better after 1 week?**

Part V. Helping students to become reflective about their approach to learning (adapted from Tanner, Kimberly D. "Promoting Student Metacognition." CBE life sciences education 11.2 (2012): 113–120.)

- The Muddiest Point—Giving Students Practice in Identifying Confusions
    - Using the last 3-5 minutes of class time, ask students to write their answer to
        - What was most confusing to me about the material being explored in class today?
        - Pose three questions that you had about the concepts you explored in your assignment that you still cannot answer.
        - Describe at least two ideas related to this assignment that you found confusing.
        - "I learned a lot in doing this assignment." To what extent do you agree? Disagree?
        - What advice would you give yourself based on what you know now if you were starting this assignment/course all over again?
- Reflective Journals—Providing a Forum in Which Students Monitor Their Own Thinking
    - Assign students with a low-stakes, low-points writing assignment after the first exam, asking students to reflect and write a brief letter to their future selves covering: "What about my exam preparation worked well that I should remember to do next time? What did not work so well that I should not do next time or that I should change?"
    - Or, you can ask them to respond to:
        - How do you plan on preparing for the upcoming exam? Why?
        - What resources are available to support you? How will you make sure to use these?
        - How does your strategy for exam preparation compare with at least three classmates? (Go ask them!)
        - What concepts have you found most confusing so far? What concepts have been most clear? Given that, how should you spend your study time in preparing for the exam?
        - Based on your performance on the first exam, write a letter to yourself with advice about preparing for the next exam
    - In addition, students can be asked to share their strategies with fellow students and to identify at least two new exam preparation strategies used by their peers.

Part VI. Helping students form study groups

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Form your own study group and work effectively in it by following these three steps:

1. Choose the right size and members.
2. Establish group expectations or ground rules.
3. Develop rotating roles.

1. **Choose the right size and members.**
   a. **Size.** Research has shown that an effective group size is approximately 3-5 members.
   b. **Members.** When selecting members, try not to choose students who all think and study in a similar manner. Having a variety of perspectives helps when you are struggling to gain a deeper understanding of a concept or problem. It's also helpful when preparing for an exam. Remember, the professor may process information similar to one of your group members, so it helps to gain this insight because the professor is the one creating and grading your assignment or exam.
   c. **Time.** Make sure all of the study group members have similar times available to meet.

2. **Establish group expectations or ground rules.** At your first meeting, share how members would like the group to function in reference to topics like: preparation prior to the meeting; attendance in group meetings; making sure everyone understands the assignment and approach; equal participation; and communicating frankly, but with respect when conflict arises, etc.

   After consensus is reached on the topics of your choice, have each group member sign a document indicating acceptance of these expectations and intention to fulfill them. Including these types of expectations in your agreement can be helpful later. For example, if you find that one person is repeatedly talking and others are feeling like they do not have the opportunity to express their opinions, you can reference the document. It makes it less personal and provides you with an opportunity to discuss how the group as a whole had envisioned the study group process.

3. **Develop Rotating Roles.** The last thing you should do to get your study group off to a successful start is develop roles and rotate them at each meeting. For example, you could have a:

   1. **Discussion Leader,** who keeps conversation moving within the group and ensures that all participants are heard.
   2. **Lecturer Connector**, who links the conversation with the readings and when it goes off course, brings the group back to focus.
   3. **Reader Connector**, who links the conversation with the readings and when it goes off course, brings the group back to focus.
   4. **Recorder**, who records and distributes the content of the meeting.

   These roles should be rotated each time you meet to maintain balance in the group through the semester.