Meta-Talks: Revitalizing Test Preparation in STEM Courses Through Peer-Guided Reflection

Tracy Hallstead and Erin Nash
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About Our Peer Educators

Quinnipiac University Learning Commons, Hamden, CT

Average Grades for Students with SI or Study Table Support

102 Peer Educators in Spring 2019

12 Peer Catalysts for FYS (100 in the fall)
32 Peer Tutors
47 Supplemental Instructors (Peer Fellows)
11 Study Table Mentors (Tracy manages these)

The SI's and STM's support students in 23 separate courses in Business, Health Science, the College of Arts and Sciences, and Engineering, totaling 115 separate sections.

68 sections for SI, 47 sections for Study Tables

In Fall 2018, 1,403 individual students made 7,018 contacts with SI leaders and Study Table Mentors.

Training of Peer Fellows and Study Table Mentors

Day-long training sessions in January and August before the start of each semester.

Ongoing small-group training meetings throughout the semester.

Focus on Reflection* to foster self-efficacy and metacognition, or self-awareness regarding one's learning.

- Reflect on mindset, Entity vs. Growth Learning (Carol Dweck, 2006).
- Reflect on Big Picture concepts first, then on definition and placement of smaller details.
- Reflect on the means to understand content rather than on content delivery alone.

*"Reflective thought: it alone is truly educative in value."
John Dewey, *How We Think*, 1910.

Mindset: Entity Learning

Based on an entry survey conducted for freshmen entering Q.U. this past fall, our students overall skew toward an "entity" mindset:

smart/dumb
winner/loser
success/failure

"I must be so stupid!"

Self–Theories of Intelligence*

Entity Learner	Growth Learner
Intelligence is fixed and inherent.	Intelligence is dynamic, built through immersion in new practices and new concepts
Students are risk-averse: error is dangerous, a sign of deficit in intelligence. Explicit signs of fixed intelligence sought: grades	Students are risk-taking: Error is an opportunity for learning. Confronting a challenge and making progress sought:"Now I can do something I couldn't do before."
Pattern of validation: "You're so smart!" Pattern of failure: "I must be dumb after all."	Pattern of validation :"Your progress in this process has paid off. Now you're ready to_____." Pattern of "failure" is "I see how my old habits have interfered with what I'm trying to do now."

Big Picture Concepts

Exercise One

- Dollar Bill
- Dice
- Tricycle
- Four Leaf
  CloverHand
- Six Pack
- Seven Up
- Octopus
- Cat Lives
- Bowling Pins
- Football Team
- Dozen Eggs
- Unlucky Friday
- Valentine's Day
- Quarter Hour

Big Picture Concepts

Exercise Two

The procedure is actually quite simple. First, you arrange things into different groups. Of course, one pile may be sufficient depending on how much there is to do. If you have to go somewhere else due to lack of facilities that is the next step; otherwise, you are pretty well set. It is important not to overdo things. That is, it is better to do too few things at once than too many. In the short run, this may not seem important but complications can easily arise. A mistake can be expensive as well. At first, the whole procedure will seem complicated. Soon, however, it will become just another fact of life. It is difficult to foresee any end to the necessity for this task in the immediate future, but then one can never tell. After the procedure is completed one arranges the materials into different groups again. Then they can be put into their appropriate places. Eventually, they will be used once more, and the whole cycle will then have to be repeated. However, that is part of life.
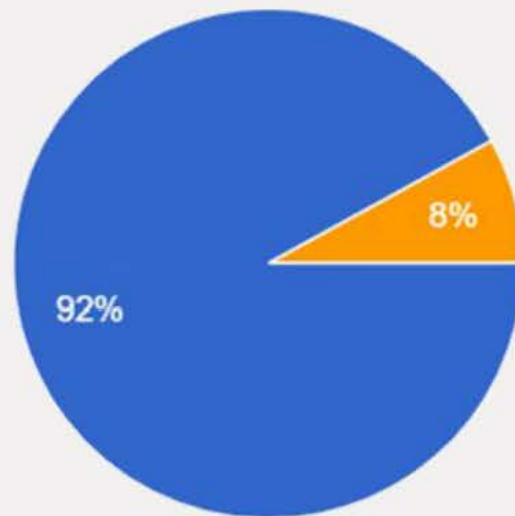
J.D. Bransford and M.K. Johnson. "Contextual Prerequisites for Understanding: Some Investigations of Comprehension and Recall." Journal of Verbal Learning and Verbal Behavior, 1972: Vol. 11, 717–726.

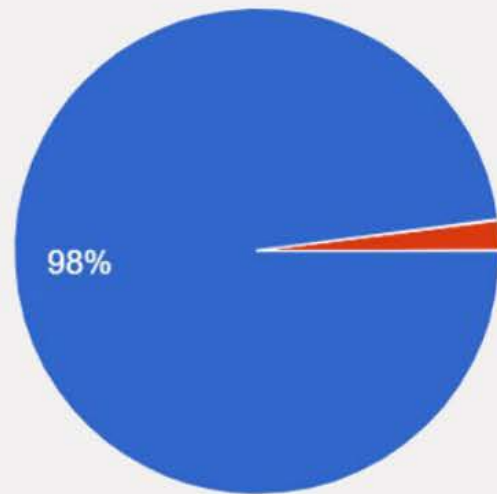"I must

October 2018, BIO 101, Exam II, Average Grade 68.8%

I study for every exam

- Of course!
- Why would I do that?
- If I have time.
- I don't know when exams are.

92% 8%

q

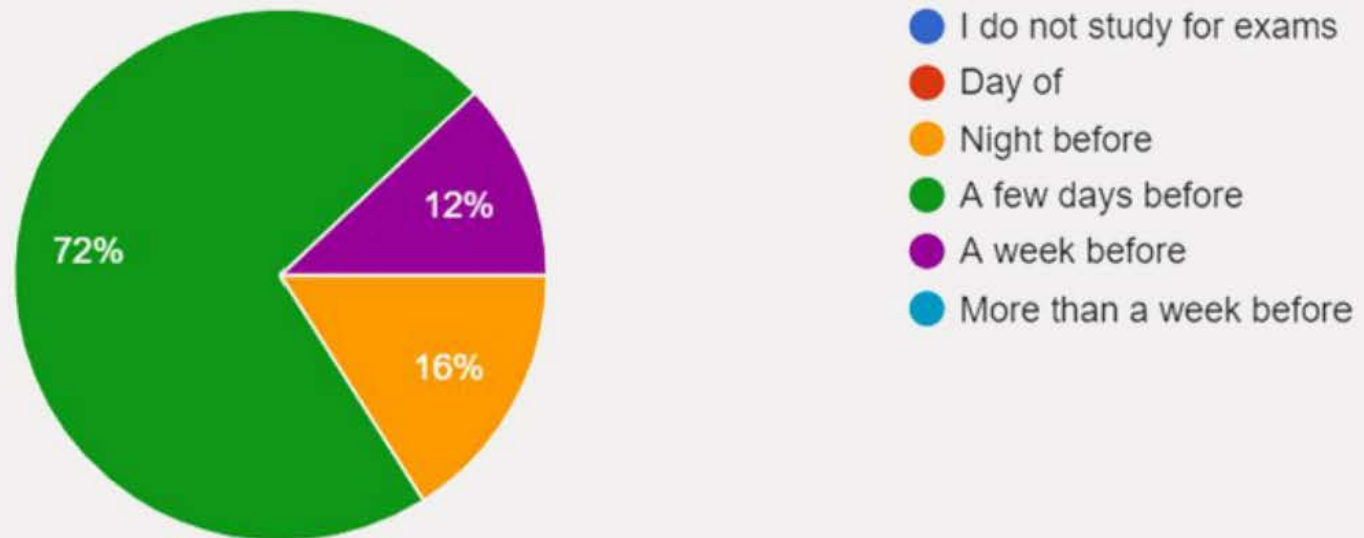# March 2019, BIO 102, Exam II
Average grade: 75

I studied for this exam

- Of course!
- Only if I was going to have time
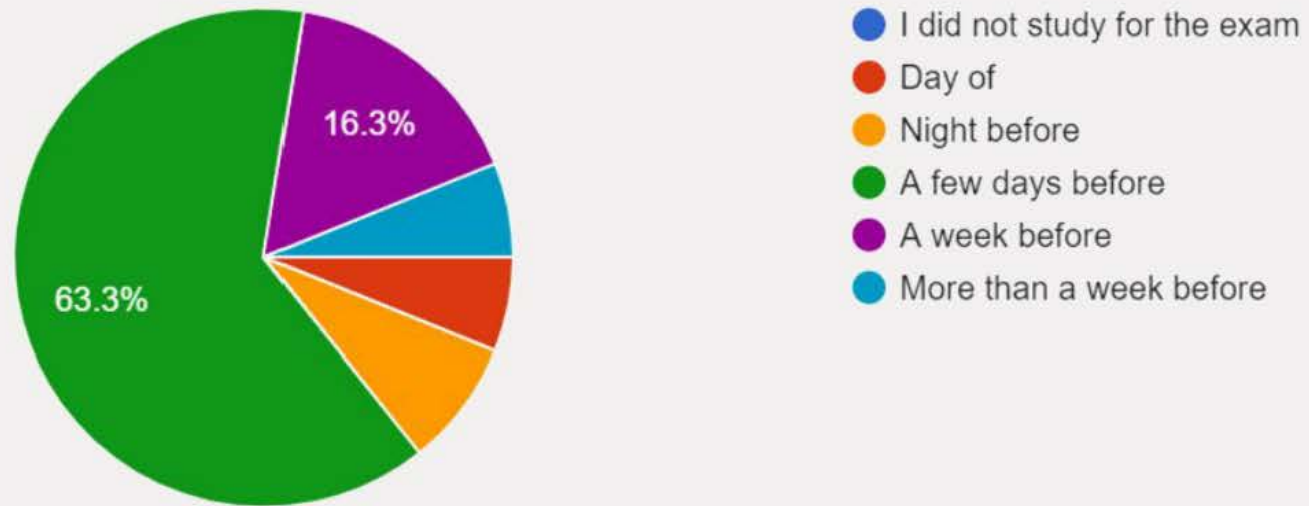- I didn't study for the exam

98%

October 2018

How far in advance do you start studying for an exam?

- I do not study for exams
- Day of
- Night before
- A few days before
- A week before
- More than a week before

72% 12% 16%

March 2019

How far in advance did you start studying for an exam?
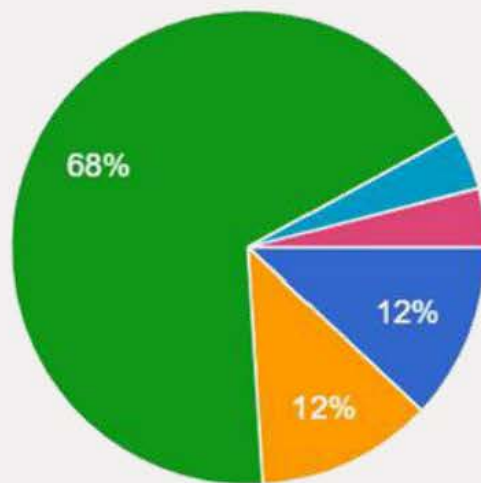
Legend:
- I did not study for the exam
- Day of
- Night before
- A few days before
- A week before
- More than a week before

Pie chart values: 63.3%, 16.3%

October 2018

March 2019

How did you format the structure of your notes?

Pie chart values: 46.9%, 24.5%, 16.3%
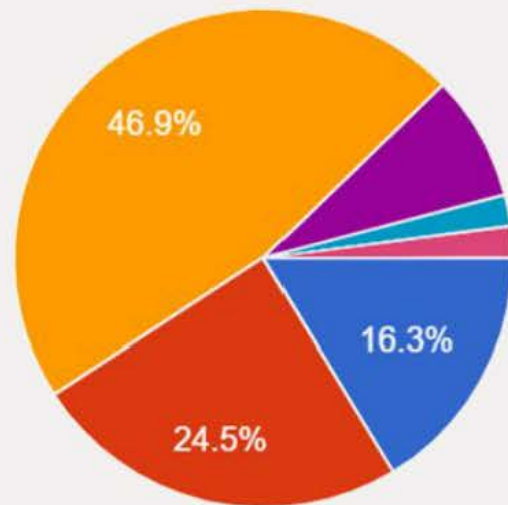
Legend:
- By hand on paper
- Typing on my laptop instead of taking notes by hand
- Typing on/filling in the PowerPoint on my laptop, tablet, or phone
- Printing the PowerPoint prior to class and handwriting my notes on the ha…
- I did not take notes
- I highlight and write on the powerpo…
- I emphasized points that Professor…

October 2018

Occurrence of study habits among students following Unit 2 exam
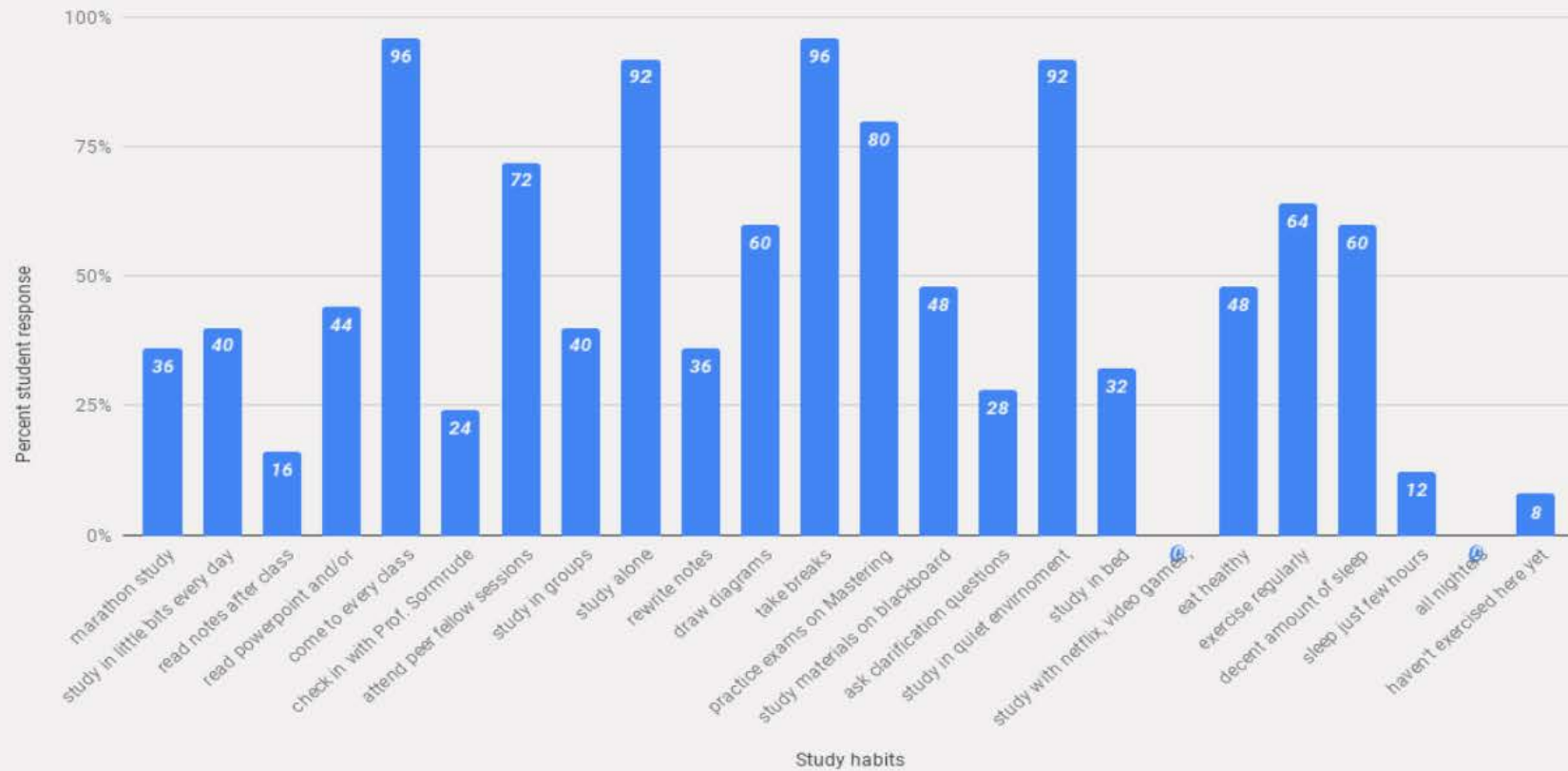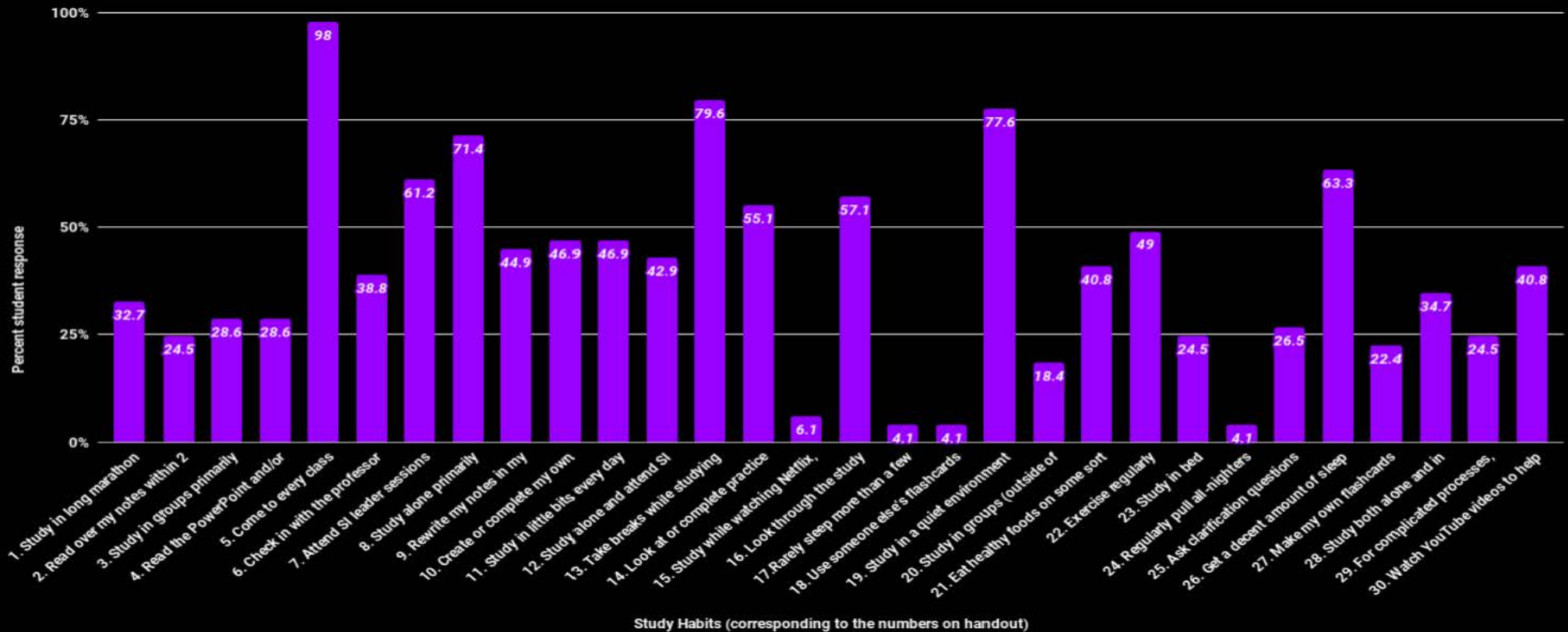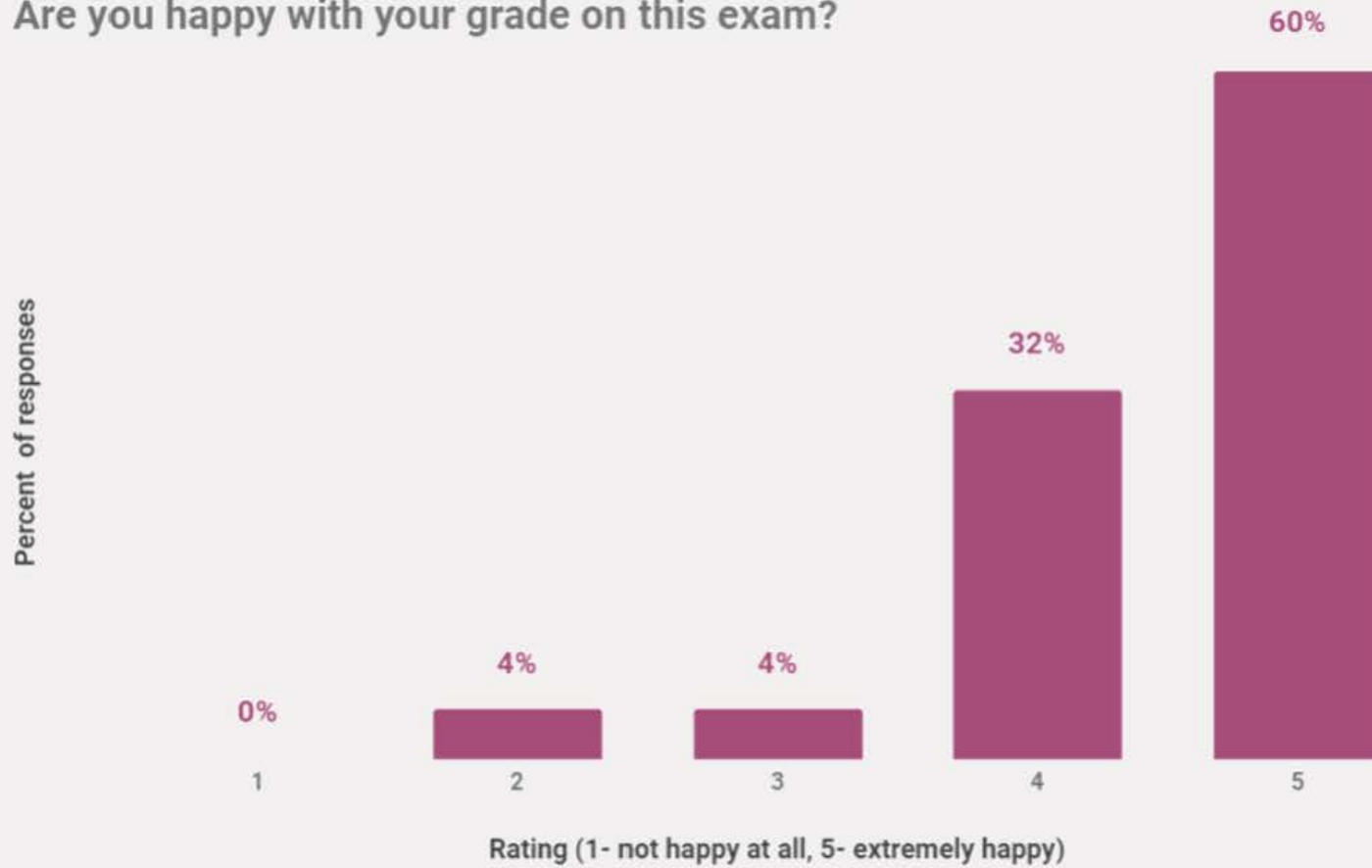
March 2019

Occurrence of study habits among students following Unit 2 exam

Percent student response

Study Habit	Value
1. Study in long marathon	32.7
2. Read over my notes within 2	24.5
3. Study in groups primarily	28.6
4. Read the PowerPoint and/or	28.6
5. Come to every class	98
6. Check in with the professor	38.8
7. Attend SI leader sessions	61.2
8. Study alone primarily	71.4
9. Rewrite my notes in my	44.9
10. Create or complete my own	46.9
11. Study in little bits every day	46.9
12. Study alone and attend SI	42.9
13. Take breaks while studying	79.6
14. Look at or complete practice	55.1
15. Study while watching Netflix,	6.1
16. Look through the study	57.1
17. Rarely sleep more than a few	4.1
18. Use someone else's flashcards	4.1
19. Study in a quiet environment	77.6
20. Study in groups (outside of	18.4
21. Eat healthy foods on some sort	40.8
22. Exercise regularly	49
23. Study in bed	24.5
24. Regularly pull all-nighters	4.1
25. Ask clarification questions	26.5
26. Get a decent amount of sleep	63.3
27. Make my own flashcards	22.4
28. Study both alone and in	34.7
29. For complicated processes,	24.5
30. Watch YouTube videos to help	40.8

Study Habits (corresponding to the numbers on handout)

March 2019

Are you happy with your grade on this exam?

Percent of responses

Rating	Percent
1	0%
2	4%
3	4%
4	32%
5	60%

Rating (1- not happy at all, 5- extremely happy)

Most Prevalent Study Habits (All Students)

October 2018

- Come to every class/take breaks (tie) 96%
- Study in quiet environment/study alone (tie) 92%
- *Look at practice exams online 80%*
- Attend peer fellow sessions 72%
- Exercise regularly (64%)
- Draw diagrams/ get a decent amount of sleep (60%)

March 2019

- Come to every class (98%)
- Take breaks while studying (79%)
- Study in a quiet environment (76%)
- Study alone primarily (69%)
- Get a decent amount of sleep/attend peer fellow sessions (62%)
- *Look at practice exams online (55%)*

Most prevalent study habits of students with an A in the class

October 2018 (17/25 students)

- Come to every class 100%
- Take breaks 94%
- Study in quiet environment 94%
- Study Alone 94%
- *Look at practice exams online 88%*
- Attend Peer Fellow Sessions 76%

March 2019 (42/49 students)

- Come to every class 98%
- Take breaks 80%
- Study in quiet environment 78%
- Study Alone 71%
- *Get a decent amount of sleep 63%*
- Attend SI Leader Review sessions 61%

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