Evaluating Organic Education

Helping students to help themselves by evaluating the efficiency of student participation in various study practices.

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Abstract

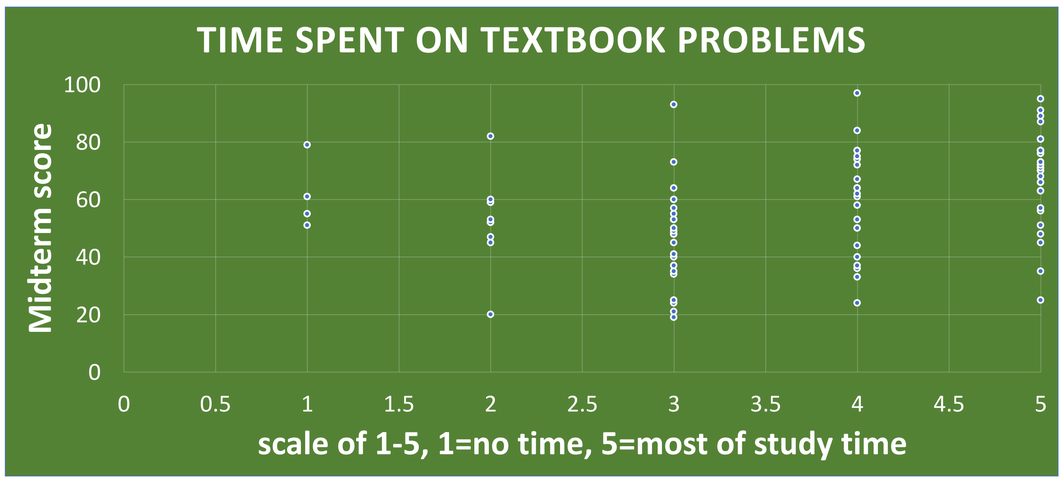
Each term, hundreds of students enroll in organic chemistry, many of them for the second or even third time.

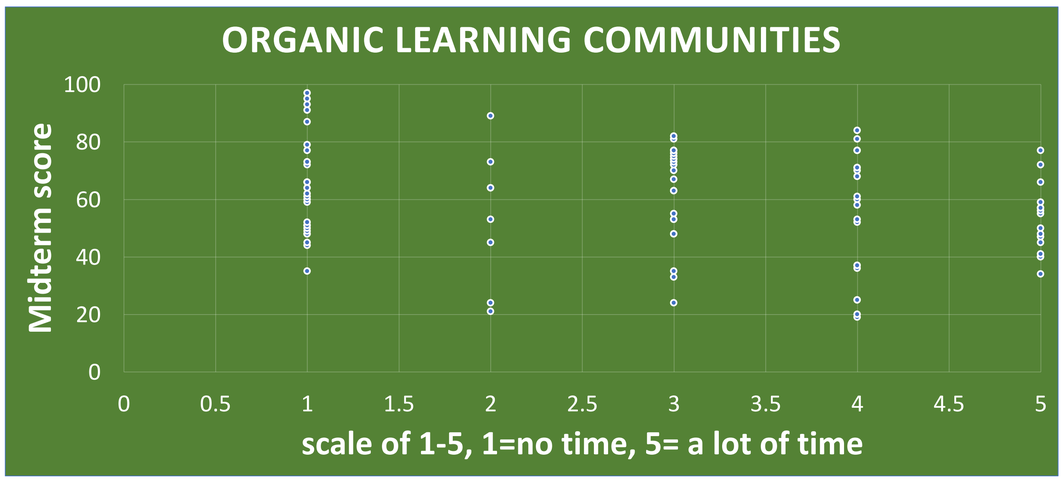
The systematic consequences of course repetition include crowded classrooms, enrollment difficulties, and slower graduation rates.

As much research has already been conducted on innovating teaching techniques, but this project focuses on evaluating student participation in study activities.

By identifying and channeling resources to the most effective study activities, the chemistry department could empower students to understand on a deeper level, and graduate sooner.

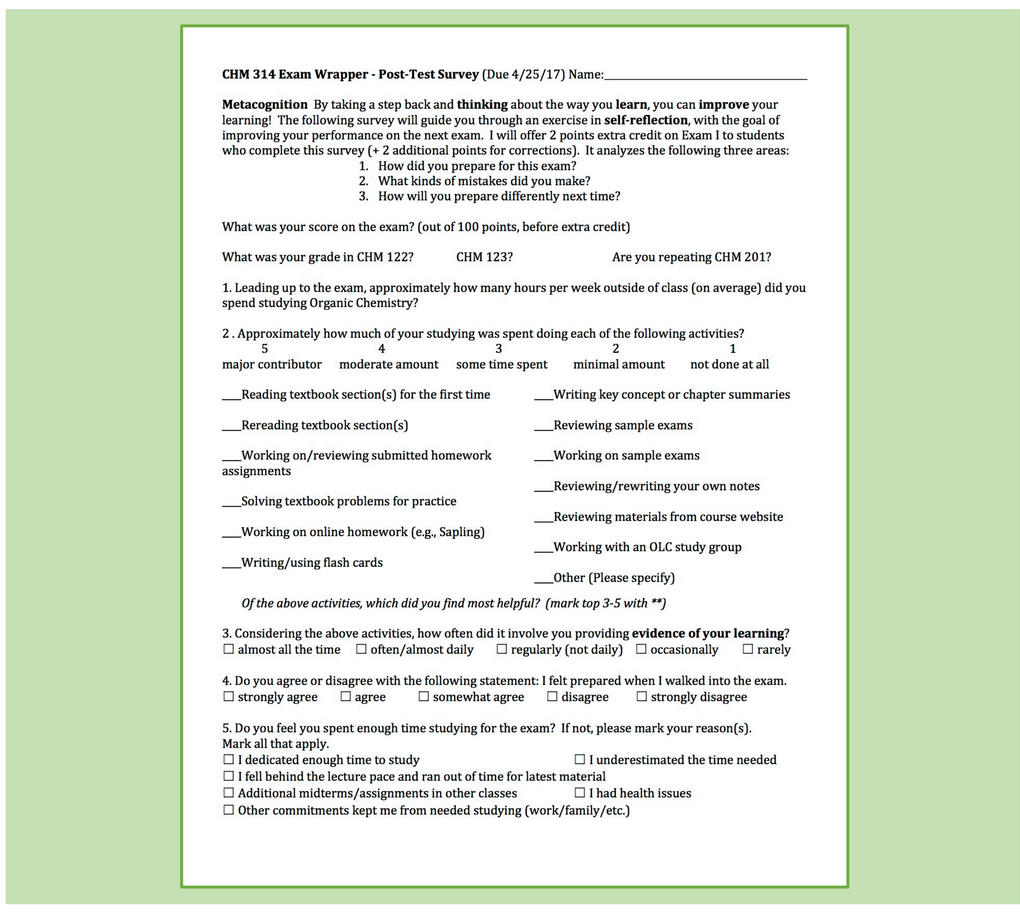
Results





Method

1. After midterms, students have the opportunity to fill out a metacognitive questionnaire about how they prepared for the exam.



CHM 314 Exam Wrapper - Post-Test Survey (Due 4/25/17) Name:_____

Metacognition By taking a step back and **thinking** about the way you **learn**, you can **improve** your learning! The following survey will guide you through an exercise in **self-reflection**, with the goal of improving your performance on the next exam. I will offer 2 points extra credit on Exam I to students who complete this survey (+ 2 additional points for corrections). It analyzes the following three areas:

1. How did you prepare for this exam?
2. What kinds of mistakes did you make?
3. How will you prepare differently next time?

What was your score on the exam? (out of 100 points, before extra credit)

What was your grade in CHM 122? CHM 123? Are you repeating CHM 201?

1. Leading up to the exam, approximately how many hours per week outside of class (on average) did you spend studying Organic Chemistry?

2 . Approximately how much of your studying was spent doing each of the following activities?

5 major contributor | 4 moderate amount | 3 some time spent | 2 minimal amount | 1 not done at all

___Reading textbook section(s) for the first time
___Rereading textbook section(s)
___Working on/reviewing submitted homework assignments
___Solving textbook problems for practice
___Working on online homework (e.g., Sapling)
___Writing/using flash cards
___Writing key concept or chapter summaries
___Reviewing sample exams
___Working on sample exams
___Reviewing/rewriting your own notes
___Reviewing materials from course website
___Working with an OLC study group
___Other (Please specify)

*Of the above activities, which did you find most helpful? (mark top 3-5 with **)*

3. Considering the above activities, how often did it involve you providing **evidence of your learning**?
☐ almost all the time ☐ often/almost daily ☐ regularly (not daily) ☐ occasionally ☐ rarely

4. Do you agree or disagree with the following statement: I felt prepared when I walked into the exam.
☐ strongly agree ☐ agree ☐ somewhat agree ☐ disagree ☐ strongly disagree

5. Do you feel you spent enough time studying for the exam? If not, please mark your reason(s). Mark all that apply.
☐ I dedicated enough time to study ☐ I underestimated the time needed
☐ I fell behind the lecture pace and ran out of time for latest material
☐ Additional midterms/assignments in other classes ☐ I had health issues
☐ Other commitments kept me from needed studying (work/family/etc.)

2. Responses to the questionnaires, as well as corresponding midterm and course grades are coded and recorded.
3. SPSS, a statistical software, was used to analyze aggregate data in order to identify correlations between academic success and participation in specific study activities.

Conclusion

There appears to be no universal correlation between the time students spends studying, and the scores they receive. This confirms the hypothesis that changing the type of student participates in could be more effective than increasing the number of hours that student studies.

Textbook problems and online homework were the most popular self-reported activities. However, of the most popular study activities, the strongest correlations were textbook problems and Organic Learning Communities with R values of 0.348 and 0.222 respectively.