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# Maximizing student use of quiz questions as a learning tool

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## Background and Purpose

Students often utilize both commercial testing banks and faculty-generated questions to prepare for exams. To improve student exam performance, students use question banks to quiz themselves at various intervals. Through this process, students can utilize the “testing effect” to improve both understanding and retention of session content. The goal at Georgia Campus of the Philadelphia College of Osteopathic Medicine (GA-PCOM) is to use question banks as a learning tool in all disciplines. However, a major challenge is aligning commercial and faculty-generated questions with session learning objectives. By aligning both sets of questions, it is anticipated that students will be able to generate practice exam questions relevant to session content and improve their long term retention of key concepts. The goal of this study is to change student behavior in using questions as a learning tool, make intuitive question searching at the correct level, and align commercial and professor-written question banks to maximize their use.

| Lecture Title  | Select Objective   | Select Keywords                                      | Faculty Generated Question   | Exam Master Question   |
|--|--|--|--|--|
| Anti-Cancer Drugs for Treatment of Gynecologic and Breast Malignancies | Describe the primary mechanism(s) by which each class of chemotherapeutic drugs act to kill cells. | Alkylating agents<br>Aromatase inhibitor<br>Arimidex | A 46-year-old woman who had undergone a radical mastectomy for infiltrating ductal carcinoma started adjuvant combination therapy with cyclophosphamide, methotrexate, and fluorouracil. Which of the following was the initial molecular action that most likely mediated the therapeutic effect of methotrexate in the patient’s disease?<br>A. DNA fragmentation through free radical formation<br>B. Inhibition of DNA chain elongation<br>C. Inhibition of microtubule assembly<br>D. Inhibition of purine biosynthesis<br>E. Inhibition of single-stranded DNA resealing<br>Bloom’s taxonomy Level 2 | The aromatase inhibitor, anastrozole (Arimidex), is widely used to treat breast cancer. Aromatase is responsible for:<br>A. Conversion of progesterone to estradiol<br>B. Conversion of androstenedione to estrone<br>C. Conversion of cortisol to estradiol<br>D. Conversion of estradiol to estrone<br>E. Conversion of estrone to dihydrotestosterone<br>Bloom’s taxonomy Level 1 |

## Methods

Two surveys were sent out to assess current perceptions of question bank utilization, one to faculty and one to students. The student survey was sent to selected students on campus who face a comprehensive exam (osteopathic medicine, pharmacy, and physician assistant students). Additionally, a pilot study was created which combined faculty-generated questions with commercial question bank questions. The pilot study was limited to one specific lecture. Exam Master was chosen for the test pilot as the resource allows faculty-generated questions to be uploaded and combined with their commercial questions to form one test which can be sent to students. All questions were labeled with Bloom’s taxonomy.

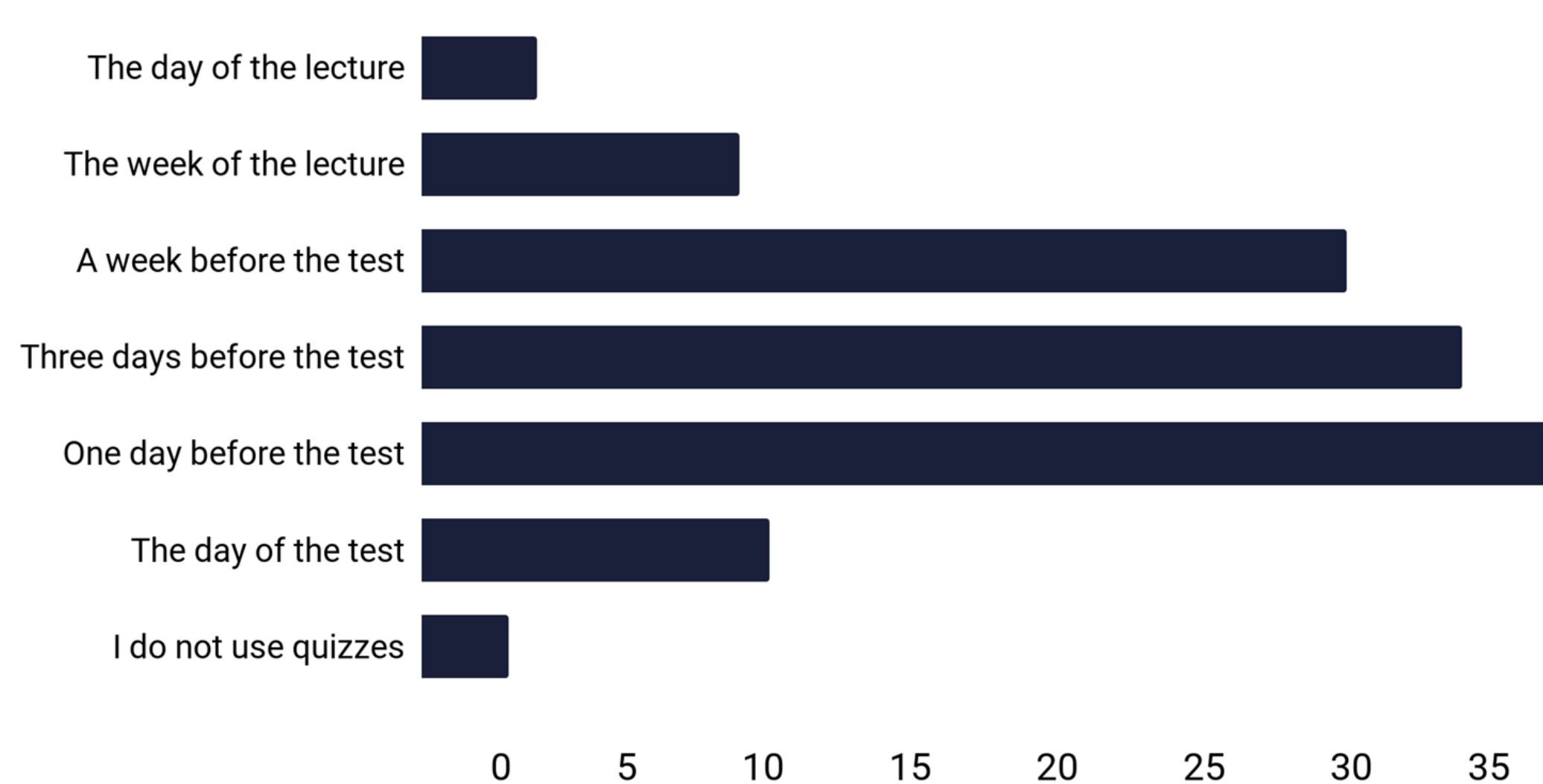
## Results

The pilot study resulted in 8 faculty generated questions and 12 from Exam Master. Survey response indicates that most faculty create their own questions but do not direct students to use commercial banks. It also showed that students use question banks frequently. 53% of students use faculty provided questions while 40% use commercial question banks, half of which were self-purchased (versus library provided). When students were asked when they use question banks, most said the week before a test, three days before, or the day before the test. Only 5.6% of students indicated that they started testing themselves the day of the lecture and only 15.3% said they quizzed themselves on the material the same week of the lecture.

How often do faculty provide or utilize practice quiz questions to help students study?



When do students start quizzing themselves to prepare for a test?



How often do students use practice questions as a



## Implications/Discussion

The survey showed students inhibit themselves with their study strategies as most do not start quizzing themselves early enough. It is also currently unknown what level of Bloom’s taxonomy students quiz themselves with when they use library provided or self-purchased commercial question banks. However, the curated set of progressive questions (with teaching rationale) embedded within Exam Master is expected to improve access to formative question banks and better prepare students for content mastery. The formative feedback of quizzing will become a useful and integral part of the learning cycle.

## Acknowledgements

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## References

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