Keep Moving Forward: Evolving Curricular Assistance Using Custom Question Banks

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Background

- Students utilization of questions for exam prep
- Challenge aligning questions with session learning objectives
- We want to change student behavior in using questions
  - learning tool
  - intuitive question searching at the correct level
  - alignment of questions from commercial vendors and professors
Methods

• Group Meetings
  – Interdepartmental collaboration between the Library, Pharmacy faculty, and Biomedical faculty

• Surveys
  – Question bank use
  – Sent out two surveys, one to faculty and one to students

• Developmental Model and Pilot
  – Tested Exam Master’s functionality by uploading users and questions for one solo class lecture
  – Pharmacy course
Methods - Surveys

- Assess current perceptions of question bank utilization
- Student survey was sent to selected students on campus who face a comprehensive exam
  - osteopathic medicine, pharmacy, and physician assistant
- Faculty survey was sent to all faculty
  - No need for separation
  - Biomedical masters overlap with school of medicine faculty
Methods – Developmental Model

• Combined faculty-generated questions with commercial question bank questions
• Limited to a specific lecture
• Exam Master allows combination of faculty-generated questions with their questions to form one test
  – Can be assigned and sent to students
  – All questions labeled with Bloom's taxonomy
Methods - Pilot

- Anatomy class for 1st year pharmacy students
- Combined faculty-generated questions with commercial question bank questions
- Assigned as optional and sent to students
- All questions labeled with Bloom's taxonomy
- Assigned by grouped lectures
Results - Survey

- Faculty
  - Most faculty create their own questions
  - Most say they’re aligned with Bloom’s taxonomy
  - Do not recommend use of commercial banks
Results - Survey

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

- Never: 1
- Always: 6
Results - Survey

- **Student**
  - 53% use faculty provided questions
  - 40% use commercial question banks
  - Most use question banks to study right before an exam
  - About 20% begin use the week of the lecture
Results - Survey

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

- The day of the lecture
- The week of the lecture
- A week before the test
- Three days before the test
- One day before the test
- The day of the test
- I do not use quizzes
Results - Survey

How often do students use practice questions as a

<table>
<thead>
<tr>
<th>Never</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>30</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
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<td>20</td>
<td>15</td>
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<tr>
<td>30</td>
<td>25</td>
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</table>
## Results – Developmental Model

<table>
<thead>
<tr>
<th>Lecture Title</th>
<th>Select Objective</th>
<th>Select Keywords</th>
<th>Faculty Generated Question</th>
<th>Exam Master Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-Cancer Drugs for Treatment of Gynecologic and Breast Malignancies</td>
<td>Describe the primary mechanism(s) by which each class of chemotherapeutic drugs act to kill cells.</td>
<td>Alkylating agents Aromatase inhibitor Arimidex</td>
<td>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? A. DNA fragmentation through free radical formation B. Inhibition of DNA chain elongation C. Inhibition of microtubule assembly D. Inhibition of purine biosynthesis E. Inhibition of single-stranded DNA resealing Bloom’s taxonomy Level 2</td>
<td>The aromatase inhibitor, anastrazole (Arimidex), is widely used to treat breast cancer. Aromatase is responsible for: A. Conversion of progesterone to estradiol B. Conversion of androstenedione to estrone C. Conversion of cortisol to estradiol D. Conversion of estadiol to estriol E. Conversion of estrone to dihydrotestosterone Bloom’s taxonomy Level 1</td>
</tr>
</tbody>
</table>
Results - Pilot

Implemented for a 1st year Pharmacy Anatomy, Physiology, and Pathophysiology course

More assessment is needed
Implications

• Students and Faculty
  – Do not start quizzing early enough
  – Curated set of progressive questions in Exam Master
    • Expected to improve access to formative question banks
    • Better prepare students for content mastery
  – Formative feedback of quizzing
    • Useful and integral part of the learning cycle
Implications

- Libraries
  - Behind the scenes curricular involvement
  - Knowledge of question categorization/level of taxonomy
  - Departmental collaborations
  - Increased use of library during curricular changes
  - Assistance with research in other areas
Lessons Learned

• Academic
  – Curricular changes
  – Student use/time

• Technical
  – Uploading issues in Exam Master
  – Non-intuitive process for setting up practice quizzes
  – Lack of good and easy to use assessment information
Future Plans

- Embedding in curriculum of other classes
  - 1st year pharmacy
- Embedding into the curriculum of other programs
  - School of Osteopathic Medicine changes between 2019-2020
- Additional input from tutors and student affairs
  - Shubha Kayarthodi, PhD, Academic Support Specialist
Questions? Comments? Suggestions?
References