Training Activity: Exam Review Games

Activity Type: Group “game” activity

Goals: To get discussion leaders to use review games that maximize upper-Bloom’s-level questions and student participation.

Abstract:

<table>
<thead>
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<th>Activity</th>
<th>Duration</th>
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<tbody>
<tr>
<td>Pre-class prep</td>
<td>30-60 min</td>
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<tr>
<td>Discussion of game weaknesses</td>
<td>10 min</td>
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<tr>
<td>Run game, discuss question options, answer other questions</td>
<td>15-30 min</td>
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Time needed: As many minutes as available. Adjust number of questions as needed.

Materials needed:
- Presentation materials (laptop and LCD projector or pre-made posters)
- Small, personal whiteboards and dry erase markers for groups of 3, napkin “erasers” for each group.
- Enough candy for the winning half of the room.

Before class:
1. Create a PowerPoint deck that contains 1-2 questions for each lecture covered by the upcoming exam. Make the questions:
   a. Hard rather than easy (unless the exam is only an hour away)
   b. Some old exam multiple choice questions
   c. Questions that require understanding a figure or image
   d. Questions that require students to figure out which lecture the information or figure came from
   e. Questions that require students to write out a term or draw a simple molecule
   f. Questions that especially focus on new material leaders haven’t had time to go over yet.
2. In general, the answer to each question needs to be something that can be written in less than 5 words or drawn in less than 1 minute.

During class:
Hi all! How is teaching going? (discuss any important issues)

Okay, today we are going to talk about exam reviews. As I’ve already said, you should not hold extra office hours or have a special exam review session. But it’s fine to have some review activity for your discussion. One that is often chosen is some sort of game, like Jeopardy or Taboo. Perhaps you have used this before, or seen it used. What are some of the weaknesses you’ve seen? (write notes on board)
Good! The main problems I’ve seen are:

- Questions are too easy (often because of the structure of the game itself – Jeopardy requires many questions, Taboo is mostly vocabulary)
- Only smart/quick/outgoing students answer the questions
- Students try to take notes on questions/answers instead of thinking of responses

I’m going to demonstrate a game that I use that gets around those difficulties. The main ways I avoid the limitations is by:

- Not trying to match an existing game show or board game
- Having groups respond on whiteboards
- Posting the questions and answers after the game

Here’s how we will play. Please get into groups of three, and turn your desks together. Send one member of each group up to get a board, marker and napkin eraser. Now, I will divide the room into two teams of X groups. I’ll keep score over here. This half of the room (point at that half) what do you want your team name to be? How about you guys? Okay. The side of the room that gets the most boards correct gets the point for the question. The team with the most points at the end of the game wins.

Here’s the first question (project slide on whiteboard). Okay, you have one minute to discuss and write your answer on the whiteboard. Okay…. Boards up! Hold them up so the rest of the room can see them. Good! You got the answer correct. That’s encouraging. It’s a tie, so both teams get a point.

This question is an old exam question. If the students had had trouble with this one, I would have drawn a simple diagram on the board to show the celery in the water, and help them understand the concepts. Ready for the next one?

(Continue with slides. Explain why each was chosen. Talk about likely confusions students will have)

As you can see, when a game is run this way, all students tend to participate, and they have to think hard in order to get the questions right. Can you think of any other ways to maximize student involvement during a review session? Good.

Some final points about being a discussion leader before an exam:

- Students will ask you for study guides and review sessions. Don’t provide them. You can have a discussion activity on “how to create a study guide from your lecture notes” that would be much more useful.
- If you want to ask students if they have any questions about lecture material, do it in an organized fashion. Have students get out their lecture notes. Start with the first lecture covered by the exam, and ask what the main points are. Then ask if there are questions. This will give students a chance to look over their notes and remember confusions. It will also give them a chance to write down any good information you provide in the appropriate place.
• Have limits on what you will do by email. You don’t need to answer late-night questions. You don’t need to answer questions that require more than one sentence to answer. You can tell students: “what do you think is the answer?” and then correct their explanation. You can answer questions on a chat or noteboard to help other students.

Good luck on the exam!
Sample questions

6. Celery stalks that are immersed in fresh water for several hours become stiff. Similar stalks left in a salt solution become limp. From this we can deduce that the cells of the celery stalks are
   a. isotonic with fresh water but hypotonic to the salt solution.
   b. hypotonic to both fresh water and the salt solution.
   c. hypertonic to both fresh water and the salt solution.
   d. hypertonic to fresh water but hypotonic to the salt solution.
   e. hypotonic to fresh water but hypertonic to the salt solution.

An old exam question on a topic students do not understand well.

1. What element of glucose is most important for ATP production?
   a. electrons
   b. protons
   c. oxygen
   d. carbons

I usually show this question without the figure. If many get the answer wrong, I give them this version and allow them to try again.

2. List the four covalent bonds of the four important biological molecules

Practice recall of biological terms
4. Where would you expect to find non-polar R groups on this protein?
   a. X
   b. Y
   c. Z
   d. X and Y
   e. X and Z

Practice drawing molecules. I can also ask what the functional group on the R group is, whether it is polar or not.

I ask: “What lecture is this from?” I often have a series of these to encourage familiarity with lecture notes, plus encourage them to keep them together and organized in a 3-ring binder for easy access.