Activity: Just in Time Teaching

Activity Type: Online pre-class quiz and small group discussion

Goals: TAs will practice:
- Administering an online quiz in their discussions
- How to adjust classtime based on quiz results

Abstract:

| Pre-class prep for TAs (designing and administering the quiz) | 10-60 min |
| Choosing best question / activity | 10 min |
| Discussion | 10 min |

Time needed: 20 minutes

Materials needed:
- Homework sheet for week before
- Online quizzing software (normally part of a course management system)

Previous Training Meeting:
As we wrap up this week’s discussion, I want to pass out this homework assignment for you. I would like everyone to try a technique in their discussions between now and the next training meeting, and then at the meeting we will discuss how it went and what you learned. This assignment will require you to write two short-answer questions and post them for your students to take online before they come to class.

During class:
(10 min) Hi everyone! I gave you a bit more work than normal to do between the last training and this one. Hopefully you found my samples to be helpful and you figured out how to run an online quiz.

Our first activity today is to compare the questions and activities you used, and gather the best ones. In your groups, choose which question / activity combo you would recommend to next year’s TAs. If there were things you wish were slightly different about either, feel free to change them now. Write the improved question down on a piece of paper for me to collect.

Now that you have all DONE “just in time teaching,” let me make sure you understand what it is. The general rule is a) test students before class, b) judge the responses, and c) adjust your class to teach to their misconceptions.

- What did you find useful about this activity?
- What did you find difficult about it?
- Will you use it in the future? How might you change it?

That’s it for my part of the meeting. Thank you!
Homework! Due Next Week

1. **Write** two short-answer questions from recent lectures before your discussion. The question should be difficult enough that students will need 2-3 sentences to answer each, and cannot be answered unless they understand the lecture material and can apply it. You are welcome to collaborate on these questions and share them among yourselves. Some sample questions:

   - When in meiosis does a cell become haploid? How many chromosomes are present before and after?
   - How many chromosomes are present after S phase in a human cell?
   - Describe some ways in which Metaphase 1 in meiosis is different than Metaphase in mitosis.
   - Look at the hypercholesterolemia slide from your Lecture 17 notes. How is the H allele of the gene different from the h allele?
   - Using the words “gene” and “protein,” describe how incomplete dominance is different from co-dominance.

2. Create an online **quiz** through EEE and assign the questions to your students. You can have more questions if you want – maybe you want to find out what kind of discussion activities they like best, or what study technique they think helped the most when they studied for the midterm. Their responses should be due either the night before or the morning of your discussion day.

3. Create a worksheet question or other **activity** for each of the quiz questions. They should be clearly similar to the quiz question. An old worksheet of mine is attached as an example.

4. **Read** over the quiz results the night before or the morning of your discussion. Decide which question the students are struggling most with.

5. When you meet for discussion, tell the students that their responses to the quiz have indicated they need the most help with the concept you are going to cover first. **Do** the “needed” worksheet question or activity first, then do others as time permits. Make sure you are addressing any common misconceptions you saw on the quizzes.

6. **Bring** a copy of the EEE quiz results page to the TA training meeting next week.

Any questions? Email Adrienne and ask.
SAMPLE WORKSHEET

1. Fill in the chart below for human cells.

<table>
<thead>
<tr>
<th>Stage</th>
<th>How many strands of DNA?</th>
<th>How many chromosomes?</th>
<th>Chromosomes look like:</th>
<th>How many chromatids?</th>
<th>Haploid or Diploid?</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. All cells in G1</td>
<td>46</td>
<td>46</td>
<td></td>
<td>0</td>
<td>2n</td>
</tr>
<tr>
<td>b. Metaphase of mitosis</td>
<td>92</td>
<td>46</td>
<td></td>
<td>92</td>
<td>2n</td>
</tr>
<tr>
<td>c. Metaphase 1 of meiosis</td>
<td>46</td>
<td>46</td>
<td></td>
<td>2n</td>
<td></td>
</tr>
<tr>
<td>d. Daughter cell after cytokinesis 1 of meiosis</td>
<td>46</td>
<td>23</td>
<td></td>
<td></td>
<td>2n</td>
</tr>
<tr>
<td>e. Daughter cell after cytokinesis 2 of meiosis</td>
<td>23</td>
<td></td>
<td></td>
<td>0</td>
<td>n</td>
</tr>
</tbody>
</table>

2. Look at slide 17-13 from Lecture 17. Write a sentence that explains why the number of receptors is reduced in the heterozygote.

3. The Wacky-winged Crane has three alleles for the gene of wing color: R (for red), B (for blue) and w (for white).

   a. How many alleles can any one crane have?

   b. What are the possible genotypes in a crane population?

   c. The alleles R and B are codominant, the w allele is recessive. What are the possible phenotypes in a crane population?