Today’s Topic: Effective Use of Student Response Systems in Large Lecture Halls

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Housekeeping – Zoom Meeting viewer interaction
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UC STEM Faculty Learning Community

The UC STEM Faculty Learning Community in Biology and related Sciences is composed of chapters from our respective campuses with the overarching goal of disseminating best practices in science teaching and to provide a venue for launching new projects and programs.

Project Goals

1. Designate an implementation team of respected faculty and staff from each campus.
2. Host annual meetings with representatives from the major programs engaged in the transformation of STEM teaching in the UC system to share information on facilitating change in teaching, learning objectives for similar courses, effective strategies for involving students in research, and other topics.
3. Establish an intercampus exchange program for individuals who wish to travel to or among the UC campuses supported by the HHMI Research Universities program.
Student Response Systems at UCSB

• Standardized on i>Clicker solution
  • Used in introductory chemistry, physics, and biology
• Lectern computers are equipped with i>Clicker receivers
• Integration with Moodle course management system
  • iGrader roster is synchronized with Moodle course roster
  • Daily clicker score easily synchronized to Moodle gradebook
UCSB Introductory Biology: MCDB 1A

• Sophomore level course
• Lecture in Campbell Hall (860 seats) + video stream to overflow room (300 seats)
• No discussion sections.
• 680 - 1,000+ students
• Multiple choice Scantron exams
• Team taught by 3 different faculty
• Biochemistry, Molecular Biology, Cell Biology and Genetics
The family below has one member exhibiting a rare autosomal trait. What is the probability that the unborn child indicated by the question mark will show the trait?

A. 1/12  
B. 1/18  
C. 1/24  
D. 1/48  
E. 1/64

think – pair – share
The R/r and S/s genes are linked and 40 map units apart. In the cross Rs/rS x Rs/rS, what fraction of the progeny will have rS phenotype?

A. 18%
B. 20%
C. 21%
D. 30%
E. none of the above
Question Type: Multiple Choice
Significant Characters: 16
Time Started: 8:38:07 AM
Correct Answer(s): C

<table>
<thead>
<tr>
<th>Answer</th>
<th>#</th>
<th>%</th>
<th>Performance Points</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>6</td>
<td>2%</td>
<td>1</td>
</tr>
<tr>
<td>B</td>
<td>79</td>
<td>20%</td>
<td>1</td>
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<tr>
<td>C</td>
<td>245</td>
<td>63%</td>
<td>2</td>
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<tr>
<td>D</td>
<td>8</td>
<td>2%</td>
<td>1</td>
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<tr>
<td>E</td>
<td>50</td>
<td>13%</td>
<td>1</td>
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When during a lecture should clicker questions be used?

Learning requires attentiveness. It is difficult or impossible for students to pay attention to anything for very long while they are passive. Several researchers have measured the percentage of students paying attention to a lecturer at different times during the lecture (Bligh, 1998, Ch. 2; Bunce et al., 2010; Middendorf & Kalish, 1996; Penner, 1984; Stuart & Rutherford, 1978).

Suggested Topics for Discussion

• Course credit for clicker responses?
• How many clicker questions in a 50 minute lecture?
• When is the best time during a lecture to ask a clicker question?
• What Bloom’s level for clicker questions?
• Content coverage versus formative assessments - What is the right balance?
### Table 6.5–1  Six Common Active Learning Mistakes

<table>
<thead>
<tr>
<th>Mistake</th>
<th>How to Avoid the Mistake</th>
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<tr>
<td>1. Plunge into active learning with no explanation.</td>
<td>First explain what you're going to do and why it is in the students' best interests.</td>
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<td>2. Expect all students to eagerly get into groups the first time you ask them to.</td>
<td>Be proactive with reluctant students in the first few group activities you conduct.</td>
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<td>3. Make activities trivial.</td>
<td>Make active learning tasks challenging enough to justify the time it takes to do them.</td>
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<td>4. Make activities too long, such as assigning an entire problem in a single activity.</td>
<td>Keep activities short and focused (five seconds to three minutes). Break large problems into small chunks.</td>
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<td>5. Call for volunteers after every activity.</td>
<td>After some activities, call randomly on individuals or groups to report their results.</td>
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<td>6. Fall into a predictable routine.</td>
<td>Vary the formats and lengths of activities and the intervals between them.</td>
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