Catalyzing Learner Engagement Using Cutting-Edge Classroom Response Systems in Higher Education

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Teacher: What are you drawing?
Teacher: What are you drawing?
Jane: A picture of God
Teacher: What are you drawing?
Jane: A picture of God
Teacher: But no one knows what God looks like.
Teacher: What are you drawing?
Jane: A picture of God
Teacher: But no one knows what God looks like.
Jane: Well, they will in a minute!

*Sir Ken Robinson, Ted Talk on Creativity*
Learning doesn't have to be this way!
Expert learners and effective learning

- Metacognition
- Retrieval practice
- Effortful retrieval
Interactive teaching

- Instructor poses a question to the class
- Could be knowledge-based, conceptually-based, or opinion-based
- Responses are solicited from all students
- Results used to inform instructional direction and strategy
Peer instruction

- **speak**
  - question
    - poll
      - < 30%
        - revisit
      - 30–70%
        - discuss
        - repoll
      - > 70%
        - explain
        - repeat

It works

\[ g = \frac{S_f - S_i}{1 - S_i} \]

Typical implementation tools: Then
Typical implementation tools: Now
What’s wrong with what we have?

- Largely restricted to multiple-choice questions
- Limited productivity of some peer instruction groups
- Not always easy to make use of student response data
- And why should students be using clickers when they all are already bringing other, more powerful devices to class?
Learning Catalytics: A new cloud-based platform for interactive teaching
Many different constructed-response question formats (graphical, numerical, algebraic, textual, ...)
This image shows Oahu as seen from the Space Shuttle. The image provides several clues about the direction of prevailing winds in Oahu. Indicate this direction by drawing an arrow on your screen.

Round 1

77 responses, 16% correct

17 get it now
3 still don't get it

What do you see as the most important part of this Shakespeare sonnet?

For shame! deny that thou bear'st love to any,
Who for thyself art so unprovided.
Grant, if thou wilt, thou art beloved of many,
But that thou none loveth is most evident;
For thou art so possess'd with murderous hate
That against thyself thou stick'st not to conspire.
Use real-time analytics to generate discussion
Use real-time analytics to generate discussion
Measuring learner engagement: Finding “natural teachers”
Who among the students are the “natural teachers”? 

- When students are engaging in discussions, both learning and teaching occurs.
- When a particular student’s partners consistently improve, they are, in a sense, a “natural teacher.”
- We can identify these students using the Learning Catalytics data.
Who among the students are the “natural teachers”?
Thank you!

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