What Aids Grades? Examining Student-Generated Questions

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Motivation
- Students belong to a society that votes, makes personal health choices, and purchases goods and services. An understanding of science is beneficial in these decisions.
- Student-Generated Questions (SGQs) could be used as an instructional tool to identify misconceptions, assess student understanding, and promote student-centered learning.

Research Question
How does question complexity relate to student performance throughout one semester of a biology lab for non-majors?

Methods
- Concepts of Biology Lab (BIOL 111L) Spring 2017, a course for non-biology majors, 195 students enrolled in course
- Students responded to the following prompts in a weekly online assignment
  - Pre-Course Survey: What questions about biology do you have?
  - Post-Course Survey: What new biological questions do you now have after taking the lab course? What questions do you still have about biology?
- Tertiles calculated from final lab grade
- Two coders coded responses based on the rubric
- IRR as measured by Cohen’s Kappa = 0.84
- Lab TA had an effect on question complexity

Distribution of responses in pre- and post-course surveys

Change within each tertile from pre-course to post-course survey

Conclusions & Implications
- Reflective Statements may indicate genuine curiosity and could be related to success. Engaging student curiosity could result in better learning outcomes and may motivate students.
- If students are required to relate material to their lives, will student participation and motivation increase?
- How does instructor response to student questions change student responses, motivation, and performance?
- SGQs can be used as an instructional tool to evaluate student understanding and course goals.
- Tracking individual students can show individual changes.
- Further qualitative analysis of responses could show differences in topic, question specificity, and reveal misconceptions.

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