THE IMPACT OF COLLABORATION & FEEDBACK ON SCIENCE LAB ASSESSMENTS IN A MASTERY GRADING CLASSROOM

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Dedicated to Excellence
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BACKGROUND

Mastery grading systems allow students to **retake assessments** until specific benchmarks are met. The mastery classroom has cycles of teaching, practice, assessments, reteaching, and reassessments.

In our chemistry classes, students can **revise labs** until they show proficiency of the skills assessed on the labs. An issue, however, is that students either lack **confidence** to complete revisions or have **gaps in knowledge** that prevent them from engaging in the lab revision process.

To provide additional support for a unit on stoichiometry, students completed collaborative group activities that retaught content assessed on the labs between the first attempt and revisions. Students also provided one another peer feedback during the collaborative activities.

METHODOLOGY & RESEARCH QUESTIONS

? Do collaborative activities improve **rubric scores** during the revision cycle process?
Do collaborative activities and peer feedback **improve confidence** in lab revisions for students?

Teaching & Instruction → Group & Individual Practice → Individual Lab Assessment → **Collaborative Activity & Peer Feedback** → Individual Lab Revisions → New Content and New Labs

RESULTS

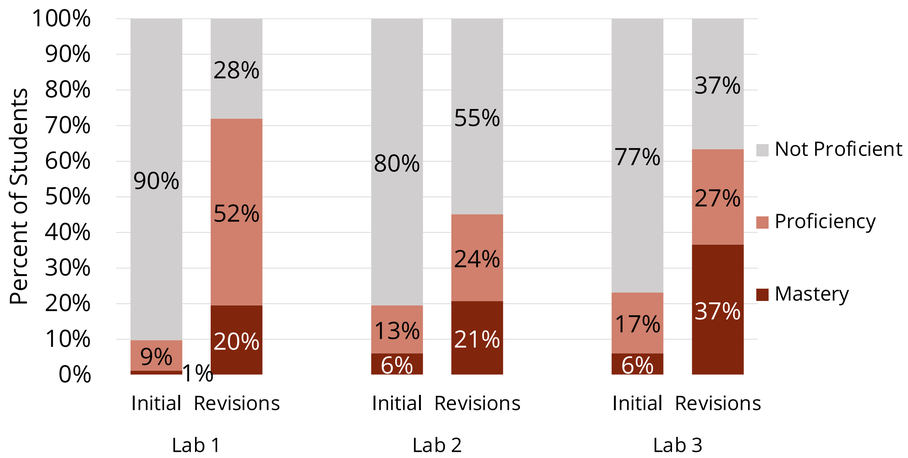

Figure 1. Percent of students initially reaching proficiency or mastery on lab compared to after completing revisions for three separate labs, (*N*=82).

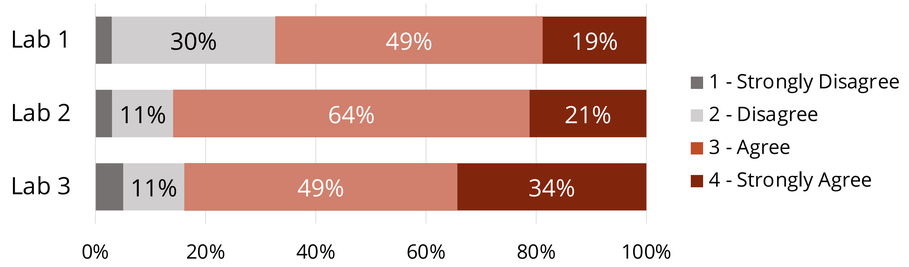

Figure 2. Rating scores following each lab's collaborative activity when asked "I feel more confident about my lab revisions because of the group activity," (*N*=82).

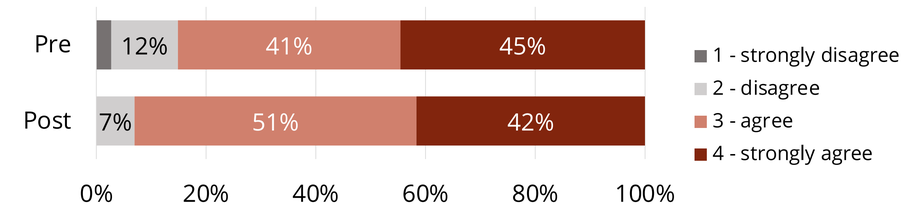

Figure 3. Rating scores for pre-post unit survey when asked "Overall, I like the lab revisions process," (*N*=82).

"Learning from my peers really helped me understand what I was doing wrong...they pointed out all the issues when I did the equations, and if I was missing units or other small details."

"I got a better understanding of actually how to do the labs when I worked with someone, instead of me just trying to figure it out when I still didn't know what to do."

CONCLUSIONS & IMPACT

- Lab **scores statistically improved** ($p<0.05$) on all 3 labs between initial attempt & revisions.
- The percentage of students who passed labs on the first attempt improved.
- **Confidence level did not change** significantly over the unit or with any of the activities.
- Students **enjoyed the mastery grading classroom more** with peer feedback because understanding improved and the classroom became more comfortable for students.
- In the future our chemistry labs will be allow some component of collaboration within the lab revision process.