

# Peer Feedback in a Research Laboratory Experience

**Educator:** Mike Schatz, Professor in the School of Physics

**Context:** In class and out of class; Introduction to Physics

**Keywords:** lab reflection, flipped classroom, blended learning

**Student Activity Time:** 5-10 minutes in class presentations and 1-2 hours outside of class collecting data and preparing for in class presentations

*In lab sessions, students presented a status of their experiment in small groups and provided each other with feedback.*

## Introducing the Reflection Activity

In an introductory physics lab, students conducted an experiment and collected the data outside of the lab. Then during lab sessions in small groups, students presented a status of their experiment and provided each other with feedback. The purpose of this reflection activity was for students to reflect back on their experiment at intermediate times throughout the project and engage in receiving and giving feedback on the experiment.

At the beginning of the term, the educator introduced students to this blended lab approach—students conducted experiments and measurements outside of class and participated in research group style presentations during lab sessions. During the research group style presentations, one student presented while the other students were assigned one area of the rubric to give written feedback on (i.e. one positive thing and one opportunity for improvement in that rubric area). Then after each student presented, the group and the educator or the TA, helped the student work through challenges he or she was facing by asking probing questions and offering ideas to consider.

In terms of outcomes, through this blended learning approach to the lab, there is the potential that students learn how to present their progress and take into consideration advice in their design process. There is also potential for students to learn how to better give and receive feedback.

## Recreating the Reflection Activity

	Description
1	If using TAs, train them to guide these peer feedback lab sessions.
2	Introduce students to the idea of a blended lab approach.
3	Guide students in collecting data outside of class.
4	Facilitate peer feedback lab sessions.

## In the words of the Educator: Tips and Inspiration

*Figure out how to scale it up.* While this reflection activity has significant merits, it can be challenging to scale up for large classes. We are working on training TAs and trying to figure out the key elements to support the graduate students to be effective facilitators.

*Help students see the value of this reflection activity.* I think it is important to explain the rationale for the reflection activity to students because they might value it more, rather than just doing it because they are told. The rationale I provide is that this reflection activity can help improve students' experience and help them learn how to present scientific information to other contexts.

*Use a mentor.* The first time someone implements this reflection activity, it can be helpful to do it in conjunction with someone who has used this activity before.

*Use TAs.* In scaling up this reflection activity, I believe the key is to figure out the key elements to support the graduate students to be effective facilitators--teaching the TA's how to teach.

*What was the inspiration for the reflection activity?* This reflection activity was developed in response to our Massive Open Online Course (MOOC) offering of physics courses. The idea was that we were offering an online course with hundreds, if not a thousand plus students and we needed to figure out a way to grade and provide feedback to all students. We decided a peer feedback method would work well. Based on our success using peer feedback in the MOOC setting, I thought it would add value to our in-person offering of these Physics courses.