



Planting the Seeds of Peer-to-Peer Feedback

How Oregon State is Building Writing and
Collaboration Skills Among Biology Students



Peerceptiv[®]

in partnership with WGU Labs.

Executive Summary

To enhance students' scientific writing and critical thinking skills, Oregon State University's *Introduction to Biology* course implemented Peerceptiv, a peer review platform that has helped reduce instructors' workload, while also building the metacognitive skills of critical self-reflection.

Led by Andrew Bouwma, a Senior Instructor in Oregon State University's Department of Integrative Biology, the program's creative use of the platform has fostered:

- **Increased efficiency.** Peerceptiv's platform has helped 300+ students gain peer feedback on complex scientific writing assignments, while allowing instructors to maximize their own feedback efforts.
- **Improved writing skills.** Bouwma notes that the difference in the quality of students' scientific writing before and after the implementation of the peer review program "has been noted by colleagues teaching upper level courses in our department."
- **Heightened metacognitive skills.** While students have improved the quality of their work, Bouwma believes their ability to critically reflect on both their own work and the work of their peers is even more valuable.

About the Client

Oregon State University's [College of Science](#) is committed to a shared purpose: it aims to build a better world through scientific discovery and helps students seek answers to how life and the universe work. At the College of Science, students experience, experiment, explore and learn. And build a foundation that opens up endless possibilities.



“Peerceptiv isn’t just a tool to make grading easier. Instead, it’s allowed me to assign things I wouldn’t normally be able to assign, which greatly increases the critical thinking taking place in my courses.”

Challenges

Andrew Bouwma runs an online Introduction to Biology series, as well as online biodiversity and entomology courses at Oregon State. The introductory biology and biodiversity courses have seen rapid growth in recent years, thanks in part to the university's expansion of its online offerings. This growth, while welcome, has posed a number of challenges.

First, the expansion of the student population made it more difficult for Bouwma and his teaching assistants to provide individualized feedback on the work of 300+ students. This challenge posed a learning hurdle for students, who are often taking their first attempt at scientific writing in the course and thus rely on feedback to meet the learning objectives of the course.

The second challenge is instilling sound scientific writing skills in a limited period of time. In the introductory biology series, over the course of the semester students are expected to learn to write a scientific paper with an introduction, methods, results, and conclusion. This paper is grounded in seed germination research that each student conducts at home. The lab component of the assignment, however, doesn't leave much time for formal writing.

Finally, Bouwma wanted to challenge students with the metacognitive task of reviewing each others' work, but the broad geographic distribution of the online students posed a practical hurdle: How best to allow them to review each other's work without congregating in a single location? Bouwma addressed each of these challenges through some creative thinking and the use of Peerceptiv's peer review platform.

The Solution

At the start of the term, each Introduction to Biology student receives a packet of lettuce seeds and is instructed to germinate the seeds using different wavelengths of light. In Bouwma's words, rather than simply report the data, he prefers to have them "write it up like a formal research project."

To split the writing assignment into palatable components, Bouwma divides the paper into two sections. Bouwma has found that including three or four paragraphs per peer-reviewed section is ideal. The first covers research and an introduction, while the second includes a results and discussion section. This timing gives the seeds time to germinate, allowing students to collect data before writing about the results.

After completing each section students use Peerceptiv's platform to provide double-blind reviews of the work of three or four peers. Sometimes students will then provide "feedback" – that is, reviews of the reviews – but Bouwma has taken advantage of the platform's flexibility to omit this step, which helps align the assignments with the relative inflexibility of online students' course due dates.

"Students often note on the course evaluations how valuable it was to review the work of other students."

The Results

By taking Peerceptiv's innovative platform and adapting it to fit the needs of his online students, Bouwma found that requiring students to engage in iterative feedback led to the creation of "better writing products."

And the use of the platform helped maximize Bouwma's time, as the peer reviews stimulate lively discussions among

the students and allow them to bring pointed questions to Bouwma when the reviews prompt further discussion.

Bouwma notes that the peer feedback program offers benefits beyond improvements in writing. "The metacognitive skills of reviewing others' work and reflecting on one's own is even more valuable," said Bouwma. "Peer review forces them to grapple with what they do understand and identify what they don't."



"The metacognitive task of seeing others' work, as well as where your own paper is good and where it can be improved, is the most compelling reason to use the platform."

"Peerceptiv is very flexible, and their team is very responsive to feedback. They've even made adaptations to the software that I've requested."

Peerceptiv, which grew out of a decade of research at the University of Pittsburgh's [Learning Research and Development Center](#), allows students to demonstrate knowledge of a subject through peer assessment, while building desirable soft skills such as critical thinking and teamwork. Learn more about Peerceptiv at peerceptiv.com.

