Student writing and learning
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Modified after an EC Handout by Rachel Beane

How writing is often included in coursework
• Final research project at end of course (last day of classes?)
• Students complete this at the last possible moment
• You frantically grade at end of semester to meet deadline
• Minimal feedback returned to student, no chance for students to learn or iterate

What are our big picture goals for teaching writing?
• Allow students to revise work iteratively to learn how to improve their writing
• Encourage them to extend the time horizon for work
• Encourage them to learn to self-evaluate/edit in a real and meaningful way
• Teach them what the reader needs to interpret their writing

Plan carefully for your specific course and needs
• Is this a general science course and you want to teach good basic analysis and writing skills?
• Is this a majors course where you are trying to teach fundamental aspects of science writing?
• Is this a capstone course where you are emphasizing highly technical writing?
• What is the length and depth of the assignment?
• The nature of your assignment may influence the appropriate approach to take

Some thoughts and approaches
• Teach writing and your expectations explicitly (what are your goals—share them with your students)
• Minimize line-by-line editing
• Rubrics
• Peer review
• Low-stakes short writing assignments
• Annotated bibliography
• Scaffolding long writing assignments
• Provide “model” examples (strong &/or weak)

Teach writing explicitly
• When are students learning about good writing?
• It may be they haven’t had explicit training as often as you might think
• Take one lecture (or more) to teach what good writing means to you and why writing is important
• Emphasize the goals of writing and the needs of the reader
  • Highlight significance of problem
  • State a thesis
  • Clear and logical flow of ideas from one section to the next, etc.
• Highlight science/earth science formats and conventions, as students may be unfamiliar with these
• Cover citation style and give examples of why we do this
• Craft your assignment carefully and be explicit about your expectations
Minimize line-by-line editing

- Tempting to do this
- Often to justify our grades?
- Cons likely outweigh benefits
- This is overwhelming!
- Mixes the small and big problems
- Highlight one example of a problem rather than each instance
- Direct students to a writing center if there are extensive problems or...
- Sit down one-on-one to highlight issues

Use a rubric

Advantages

- Sets clear expectations
- Allows students to focus on key writing concepts
- Makes grading faster/easier for you and more transparent for the student

Considerations

- How many focus items?
- How complex is the grading?

Peer review of drafts

Pros:

- Students learn better writing by editing their peers’ work
- Students may be more receptive to evaluation from their peers (but sometimes not!)
- Can save instructor time

Possible cons:

- Student evaluations may under or overshoot your own expectations, leading to confusion
- Students may not do a thoughtful review
- Students might be mean or insensitive

Issue clear guidelines about your expectations for the peer reviews. Consider collecting and editing reviews prior to returning comments. Consider grading the quality of the student review to add accountability.

Short, low-stakes writing assignments

- Allows practice and feedback without major grade implications
- Quick turn-around on feedback
- Could take numerous forms:
  - Short response to a scientific paper or news article
  - Writing a caption to a figure or image
  - Analysis of a geologic theme or concept

The annotated bibliography

- Students submit a brief overview of their paper and summarize their key sources
- Requires students to work in stages (due 2-3 weeks prior to paper?)
- Allows you to vet the project and sources ahead of time and have a head off potential problems

How to lengthen the time horizon: “Scaffolding” a longer writing assignment

- Getting students to take sufficient time on a writing assignment is challenging
- Lack of opportunity for revision based on comments
- Consider scaffolding longer assignments into manageable chunks (outline, introduction, results, etc. or however else you want to partition)
- Provide timely feedback on each section, focus on key issues
- Have students highlight for you the changes that they made for their revisions
Think, Pair, Share on a writing assignment you are considering

- On your own, brainstorm two or three content areas from your course that you could use for a student writing assignment
- Come up with the type of writing assignment that you would use for each topic
- Work with a partner to plan a writing assignment that you could give to your students with as much detail as possible
  - How long will they have to work on it?
  - What feedback, if any, would be provided along the way?
  - How will you assess this assignment?
  - How much is it worth (relative to their final grade)?
- Share your assignments with the group

Resources

- SERC Resource “Organizing Scientific writing”
- SERC Resource “A Simple Approach to Improve Student Writing”
- SERC Resource “Example of Writing Assignment on Plate Tectonics”
- Transparency in Learning and Teaching (TILT) Framework: https://www.unlv.edu/provost/teachingandlearning
  - Example of a writing assignment applying the TILT framework: https://serc.carleton.edu/teachearth/activities/209265.html