

Directed Reading of a Research Article

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Context: In-class; upper level Rheology

Keywords: reading, critical thinking

Student Activity Time: 50 minutes in-class

Students read research articles in groups and reflected on the content and purpose of the findings as a class.

Introducing the Reflection Activity

In an upper level materials science/fluid mechanics class, students were led through reading a research paper related to current class material and were challenged to critically analyze the paper and its material in groups. This activity was a way to scaffold the students in being able to critically assess the quality of experimental data and to give them experience with dissecting counterintuitive research outcomes. The purpose of this reflection activity was to engage students in a discussion and analysis of a research paper and to critically interpret the results presented in the text.

The educator split students up into groups of 3-4 and assigned each group a different section of the research paper to read. Students were prompted with three questions from the educator and then given time to read the article. Each group designated one note-taker, who recorded the answers to the questions, while another student was selected to present the findings at the appropriate time. Students reflected in their groups by responding to the following prompts upon reading the article:

1. What type of experiment was performed?
2. What data are presented?
3. What is the main observation/conclusion obtained from these data?

After each group reflected on the questions, the class discussed the findings. Following the discussion, the educator prompted the students to record questions that their group still had on their section of the text. Then, groups were directed to swap questions. Each group had a set amount of time to freely research the answers to the listed questions and report out to the class. Students were allowed to use any resource including textbooks provided by the educator, the Internet, and each other. Afterwards, the educator led the class in a follow up discussion about the findings. In conclusion, each student was required to write a 400 - 500 word summary of the paper to be turned in and graded according to the distributed rubric.

In terms of outcomes, students have the ability to become better at reading and interpreting research results. Students have the opportunity to be critical in their

approach of academic literature and are supported in acquiring accountable disciplinary knowledge and the ability to decipher complex research literature.

Recreating the Reflection Activity

	Description
1	Distribute a research paper and split up the text into different sections. Assign the text sections to groups of 3-4 students.
2	Write 3 prompts on the board and allow groups time to read their section of text, addressing the questions as they go.
3	Discuss as a class the results of each group's investigation.
4	Have students write down questions that their group still has about the portion of text they read.
5	Swap sections and corresponding questions between student groups.
6	Students research the answers to the recorded questions using any resource available.
7	Discuss the results of the research.
8	Assign students a 400 – 500 word summary of the research article as homework.
9	Grade the assignment based on the distributed rubric, ensuring that students adequately met each requirement for content.

In the words of the Educator: Tips and Inspiration

Pick the right paper. You can use any relevant research paper as a way of getting across some of the same topics you would in lecture. You just have to find one that has the information in it that you would like to cover. You can always supplement with some lecture.

Don't cap the discussion. Time for discussion is built into the activity, but I never cap the discussion unless we are running out of time. I don't say, we have 3 minutes to discuss this. I let them go and discuss it naturally.

What was the inspiration for the activity? It is good to expose students to other ways of spending time in class that is useful to them and helps them learn. You don't have to just stand there and go through material.