

Leading Discussion of a Research Paper

During the quarter you will be asked to lead a research paper discussion. Everyone will read the paper prior to coming to the discussion, but your job is to delve a bit deeper and structure a discussion for the class. Leading the discussion may require you to do additional investigation beyond reading the paper; you may need to look at article that are cited by the paper, articles that cite the paper, other research by the authors, applications, etc. in an effort to facilitate the discussion.

Preparation

If you will be leading a discussion along with one or more students, you should get together with the other students ahead of time so that you can agree on the learning goals of the discussion and decide which management strategies will be helpful.

You will have **25 minutes** of class time for your discussion. This is a hard deadline.

Identify learning goals

You should decide on exactly what the class should learn as a result of participating in the discussion. Here are just a few of the possible learning objectives for a discussion of a research article:

- Students should be able to identify the area of research the article addresses.
- Students should be able to explain the idea/hypothesis/thesis being tested in the study and how the study tests this idea. What is the goal of the research reported?
- Students should be able to explain how the article relates to other research in the area. What is the contribution of this work to the field of study? What is novel about the work?
- Students should be able to explain the significance of the research. Is it important and why?
- Students should be able to identify and expand upon the most significant conclusions presented in the article.
- Students should be able to comment on how the research results could be applied to other problems/challenges.

This is not an exhaustive list. There may be other goals that are more appropriate to your article.

Work with your partner(s) to develop your own goals for the discussion. What do you want your classmates to come away with?

Develop a summary

To start the discussion you should briefly summarize the paper for the class. This summary should include the following:

- Main Idea: What is the central hypothesis of the article?
- Methods: How do the researchers study the topic?
- Results: What are the takeaways?

The summary should be objective, save the your opinions or critiques of the paper for the discussion.

The summary portion of your presentation should be **no longer than 5 minutes**. You should assume that your classmates have read the paper.

Develop discussion questions

Develop a list of initiating and follow-up questions prepared that might be used during the discussion. These should be designed to promote discussion that will address your learning goals. Some can be more speculative to elicit opinions. As a discussion leader, make sure that you have thought about possible answers to each question you pose to the class!

Below are some generic example questions. Again, these are not exhaustive and developing specific questions for your article is encouraged.

- Are all of the results obtained consistent with the hypothesis being tested? Are there any inconsistencies?
- Do all of the conclusions drawn make sense based on the results?
- Why is this work important? Why is it novel? What is the impact of the article on robotics?
- What sort of evidence would make the authors' case stronger? What sort of evidence would argue against the authors?
- What case would a skeptical engineer make against the authors' interpretation of their results?
- Which conclusions are directly drawn from the analysis of the results, and which are more speculative?
- What other applications could be enabled by the research?

Always try to find positive points in a paper, even if the paper is, overall, very weak. Similarly, try to bring out negative features even if the paper is strong. This means you have to sort out strong and negative parts of a paper for yourself (well ahead of time).

Develop a Plan

You should organize the material above for a **25 minute** presentation/discussion. The first few minutes will be your summary of the paper and your discussion plan (learning goals, etc.). If you are leading the discussion as a team you should plan for how each team member will participate in leading the discussion.

Otherwise, the planning is open-ended. You are free to use the audio-visuals (or not).

Execution

Once the discussion gets going, you are faced with the delicate, but extremely important, task of providing periodic direction to the discussion while still giving it considerable autonomy. Discussions rapidly take on a life of their own, and it is important that you give the discussion freedom to grow and evolve in its own way. Students will rapidly lose interest in participating if it becomes clear that only certain types of responses are acceptable. At the same time, you need to keep an eye on your learning objectives and prevent the discussion from veering too far away from the subject at hand. Remember, this is an academic class discussion and not a free-form chat. If the discussion has strayed too far afield or if you need to move on due to time constraints, simply interrupt the discussion, acknowledge the current focus of the discussion, and announce that you want to bring the focus back to the original topic or that you need to take up the next issue.

It is also very important to make sure that all participants are involved and contributing. You should pay particular attention to make sure that all students have the opportunity to share if they desire. Make mental notes when a student has made an attempt to contribute but may have lost out on that opportunity because a classmate interrupted or someone else spoke up sooner. It is important to offer this student a chance to add their comments to the discussion.

Sometimes, the discussion may appear to be progressing well, when in fact, only one or a few students are dominating the discussion. If you have established the hand-raising/recognition requirement, the problem can be moderated in this manner. If not, try to include others by asking something like "Does anyone else have a view/comment that they would like to share?" or by calling on specific students to respond. Pay particular attention to soliciting the input of students who may have tried to contribute to the discussion earlier, but were not aggressive enough to make themselves heard.

At the end of the discussion, take a minute or two to make a few summary comments regarding the discussion. This is also an excellent time to reemphasize certain points associated with the discussion's learning goals.

Attribution

These guidelines were adapted from <http://evolution.berkeley.edu/evolibrary/teach/journal/journaltips.php> and <https://arthropodecology.com/2015/01/21/leading-a-discussion-of-a-scientific-paper/>