

### **a. Discussion of a single paper (Introductory students)**

In this activity students compare their readings and interpretation of the same scientific paper in order to reach a consensus opinion. *After this activity students will be confident in their ability to retrieve key information from scientific literature and ready to continue this process independently.*

*A note on assessment:* The writing assignment can be completed in-class after the discussion (5-10 minutes) or can be a take-home assignment. The brief writing assignment allows the instructor to quickly assess the understanding of each student. If individual students or groups failed to hone in the salient points from the paper, it will be readily apparent from the writing assignment. Follow up instruction can then be provided as necessary.

#### ***Suggested discussion questions:***

- What type of study did the authors conduct?
- What was the authors' hypothesis?
- What were the results?
- What were the main findings of the paper?
- Do you think the findings were justified by the results? Why or why not?
- What do we know now that we didn't know before this study?

#### ***Suggestions for assessment via a writing assignment:***

Write a concise summary (less than 150 words) of the paper that includes the authors' hypothesis, a brief summary of their main findings, and a description of the contribution to the field is (i.e. What do we know now that we didn't know before?).

## **b. Discussion of a single paper (Writing focus)**

In this activity students reflect on the quality of writing in an example paper, how the writing influenced their ability to read and make sense of the paper, and their own strengths and weaknesses as writers. *After this activity students will be better prepared to plan and develop their independent writing projects.*

*A note on sequencing:* This activity could be sequenced early in the semester or a few weeks before beginning to write a review paper.

### ***Suggested discussion activities/questions:***

#### *Mark up*

- After reading the paper through, go back and mark passages that are particularly **clear or easy to understand**.
- After reading the paper through, go back and mark passages that are particularly **unclear or difficult to understand**.

#### *Analysis*

- What makes certain passages so clear or easy to understand? (e.g. the authors used recognizable phrases as signposts—“The purpose of this experiment is...”; the authors structured an obviously logical sequence of ideas)
- What makes certain passages so unclear or difficult to understand? (e.g. the authors’ summaries make too many assumptions or provide insufficient context; the authors’ language is jargon-intensive [**NOTE:** the use of technical jargon is necessary and not categorically bad, but students—as both readers and writers—benefit from an awareness of jargon, recognizing the technical terms they need to understand and identifying those that they can expect their target audience to know])

### ***Suggestions for assessment via a writing assignment:***

Think of yourself as the author of this paper. Which parts of this paper do you think it would be easy for you—knowing your writing strengths and weaknesses—to write? Which would be most difficult? [**NOTE:** Instructors can encourage this kind of thoughtful reflection by openly addressing their own strengths and weaknesses as writers.]

Given your own strengths and weaknesses as described above, how would you approach writing a paper like this? Which section would you do first? What parts would you most want feedback on?

### **c. Discussion of papers on a similar topic (Writing focus)**

In this activity for mid-level students, each student reads a different paper on the same topic. In a group they discuss the strengths and weaknesses of the papers. The groups are given a description of a particular topic and instructed to choose which of the papers presented they would cite when writing a paper on this topic. *After this activity students will be able to both critically read and evaluate the relative importance of papers to predetermined topics.*

*Note on sequencing:* In addition to providing general preparation for students to select appropriate sources, this activity can be integrated with students' own writing of a literature review. That is, after collecting a body of relevant papers, students can practice making decisions to include/exclude sources in support of their own topic. This will help them immediately apply the lessons of this activity to their own writing.

#### ***Suggested discussion questions:***

- For each paper, briefly summarize for the group the authors' hypothesis and main findings. Do you think they are supported by the results? Why or why not? (3–5 min per paper)
- Each group is given the topic of a paper (can be drawn from previous students' final papers, if desired)
- As a group, decide which subset of the papers (must exclude at least one) you would use in writing a paper on that topic.
- Each group explains to the rest of the class why they chose to include/exclude individual papers based on the topic.

#### ***Suggestions for assessment via a writing assignment:***

Write a one-paragraph conclusion to a paper on a new topic that refers to a subset of the papers discussed in class.

Write an additional paragraph providing your justification for why you chose to include/exclude the papers you did.

#### **d. Discussion of papers on a similar topic (Evaluative focus)**

In this small group activity for advanced students, students each read a different paper on the same topic. In a group they discuss the strengths and weaknesses of the papers and decide which they would publish and why, as though they were the editorial team of a journal. *After this activity students will be able to read, critically evaluate, and review the contents and merits of a scientific paper.*

#### ***Suggested discussion guidelines:***

- Each group member takes 3–5 min to explain the hypotheses and main findings in their paper
- After hearing about all the papers, each student gives a brief (2-3 min) review of their paper, highlighting their strengths and weaknesses.
- Each group is assigned a journal and given the journal's mission statement. As a group they decide which of the articles they would publish given the journals mission.
- Report out to larger class group

#### ***Suggested writing assessment:***

Students who read an article that will be rejected (majority of class) write a rejection letter to the author explaining why they are not able to publish this article and providing their own review comments. Their comments should address both strengths as well as weaknesses. Students who read the article chosen for publication write a review to be sent to the authors suggesting substantive revisions that need to be made prior to publication in the journal.