Short Answer

Teaching Tips

To help foster a supportive environment for feedback, introduce the [importance of feedback](#) and [how to give empathetic feedback](#) with our mini-lessons.

The best questions are open-ended and ask students to **justify** opinions, **analyze** material, **articulate** a thought process, or **evaluate** a claim.

⚠️ **Avoid** fact-based recall questions.

The best feedback criteria are **positively oriented** and relevant to learning objectives. Criteria can focus on both **content knowledge** and **writing structure.**
- Make students aware of the criteria so they know how to craft their response. Or, have students decide what appropriate criteria would be.
- Emphasize that students have to make a choice about assigning feedback. *Both* or *neither* aren't options!

The best discussion questions ask students to **verbalize their thought process** about the feedback they gave. For example: "93% you said Response 1 explained the concept of photosynthesis better. Can someone share what aspect of the response made you think that?"
- Have students **predict** what results will be.
- Focus discussion on the qualities of the **responses** rather than on the students who wrote the responses.

To promote students' **metacognitive development**:
- Encourage students to **ask themselves questions** during the activity:
  - "Does my response meet all the criteria?"
  - "How did giving feedback improve my understanding of the content?"
  - "How can I improve my response using the feedback I got?"
- Provide clear **time signals** throughout the activity.

To **incorporate feedback in the moment,** ask students to reflect on how they can improve their response after receiving feedback. You may want to take time to have them **revise** their responses, either in class or for homework.

Neuroscience

In all Short Answer activities, your students **create** responses, **compare** peer responses and provide scaffolded feedback, then **converse** results as a class.

Short Answer gets your students the immediate feedback they need through social, engaging peer feedback activities and gets you deeper insight into what your students know.

Short Answer can be used at every stage of your Neuroscience lesson plan from lectures to designing experiments.

Bellringer	Get students warmed up and engaged by using Short Answer to prompt written responses about what stands out from yesterday's class.
Check for understanding	Break up lectures with quick feedback activities that get students interacting with one another. Deepen understanding while getting a quicker, more accurate pulse of what they know on an individual level.
Guided practice	Group students together to write responses and give feedback to other groups, or provide a model response in Short Answer.
Independent practice	During Short Answer activities, encourage students to reflect on how their response matches up to the ones voted as the strongest by the class. Invite revision and iteration of responses as another in-class activity, exit ticket, or homework.
Labs	Use Short Answer to bring feedback into the scientific process. Your students can create procedures for experiments, hypothesize results, and infer conclusions from data before bringing them to the class for analysis and debate.
Exit Ticket	Complete a quick, one-round Short Answer activity to leave students thinking about the most important points of the day.
Homework	Have students complete writing assignments about core content and bring them in next class for peer feedback activities and discussion to deepen understanding.

See the following page for two detailed Neuroscience use cases with example questions, feedback criteria for students to evaluate responses with, and standards alignments.

Sample Use Cases: Neuroscience

Mid-Lesson Content Review
Activity Time: 5-10 minutes
Use Short Answer to assess whether students understand new material. Results from the feedback activity inform whether content needs to be re-explained or if the class is ready to move on.

Sample Questions
- Explain the metaphor of the sensory homunculus and what it tell us about the brain.
- What are the differences between the central and peripheral nervous systems?
- Give an example of when it is appropriate to use a PET scan and when it is appropriate to use an fMRI. What do the two techniques tell us?

Feedback criteria: strong examples; detailed; accurate

Standards Alignment Examples
- Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. *(CC, 11-12.9)*
- Analyze the structure of the relationships among concepts in a text, including relationships among key terms *(CC, RST.9-10.5)*

Methods, Experimental Design, and Data Analysis
Activity Time: 15-20 minutes
Have students design experiments to response questions in neuroscience using methods talked about in class. Or, describe an experiment and have students hypothesize about what results may occur and what they indicate.

Sample Questions:
- Design an experiment testing the effect of excess extracellular potassium on action potentials.
- What effect do you expect excess extracellular potassium to have on the amplitude of action potentials?
- What scan would you use to diagnose epilepsy? Why is that the ideal method?

Feedback Criteria: detailed procedure; ethical mindset; support of inferences with results

Standards Alignment Examples
- Conduct short as well as more sustained research projects to response a question (including a self-generated question) or solve a problem; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. *(CC, WHST.11-12.7)*
- Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. *(CC, RST.11-12.9)*
- Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic. *(CC, RST.6-8.9)*