
Peer review protocol for models and explanations

Purpose

Peer review is hard work for scientists and student investigators alike. It's also essential to science knowledge-building. Peer review provides assurance that someone who has expertise in the topic has double-checked new claims and findings. In peer review of models we ask:

- Does the model help us explain the phenomenon?
- Does our model help us address our investigation/inquiry questions?
- Does the model (explanation) account for all of the evidence?
- Can we use the model to predict what will happen if we manipulate the phenomena?
- Does the model agree with our understandings about how the world works and other science models?

By cooperating (having each other's back) in peer review we'll develop more reliable and clearer explanations.

Small Group Analysis or Own Model

Prepare for peer review by analyzing your process and progress with your own model. Write your notes in **Box 1** on the Peer Review Organizer.

- **Significance:** What ideas did you think about and what questions did you grapple with as you constructed your model? What was the puzzlement?
- **Purpose:** Why did you include what you did in your model? What does your model help explain, predict, or describe?
- **Reliability and justification:**
 - What aspects of the phenomena or evidence does your model account for? What is your evidence and reasoning for your explanation?
 - What have you not accounted for yet or what are you unsure about in your model?
- **Future research:** What questions do you have about the phenomena or explanatory model at this point in the investigation?

PROJECT **READi**

Presenting and listening

Provide your model to your peers and give them some time to read it over before you present.

Some points to address in your presentations are:

- **Significance:** The big question for us was _____. What was hard to explain was _____.
- **Purpose:** We built our model to try to explain _____. We think it helps explain, predict or describe _____ because _____.
- **Reliability and justification:** We are very confident about _____ parts of our model because _____. We are still unsure about _____ parts of our model because _____.
- **Future research:** We still have questions about _____

Remaining group(s) listens, reads and makes notes in **Box 2** on the Peer Review Organizer about:

- Anything that is clear in the model.
- Anything that is unclear or potentially misrepresented in the model.
- Anything that is missing from the model (such as evidence that is unaccounted for).
- Anything that does not belong in the model (such as something that appears to lack evidence).
- Questions you have.
- Ideas for refinement to the model.

Developing a response

Listeners take a few minutes to discuss their peers' model and develop a response.

- What is well explained and accounted for in the model? Why?
- What is clear in the model? Why?
- What is unclear or misrepresented in the model? Why?
- What is missing from the model? Why?
- What does not belong in the model? Why?

Prepare 2-4 substantive responses to your peers' model. Write these in **Box 3** on the Peer Review Organizer.

Sharing feedback

Groups take turn sharing and discussing their response to their peers' model.

Each group makes notes of the feedback they receive from the peers in **Box 4** of the Peer Review Organizer.

Peer Review Notetaker

Our Model

1. My notes for the presentation	4. My notes from peers' feedback
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Peers' Model

2. My notes about peers' model	3. My response to peers' presentation
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