Supplementary Information (SI) for Chemistry Education Research and Practice. This journal is © The Royal Society of Chemistry 2025

Overview of Peer Review Engagement:

Group One: Peer Review Helps Resolve Uncertainty: Revised Claim

Student	Draft One	Praise & Stylistic	Praise & Solution	Counterargument	Vague Criticism	Revision
Pothos	Struggled with conceptual uncertainty; misinterpreted the rate constants from the browning and flavor loss tables Struggled with	Increased confidence because PR agreed with them; mentioned wanting to improve response	Increase confidence because PR agreed with them; mentioned wanting to improve response	Decreased confidence because agreed with initial conceptual uncertainty	Maintained confidence; felt the PR was too vague to act on	Changed their temperature to resolve initial conceptual uncertainty. Relied on Praise & Solution and Counterargument PRs to revise response. Changed their
Bluebell	conceptual uncertainty; misread moisture content figure	Remained unconfident; agreed with PR that they needed to improve response	Remained unconfident; agreed with student's initial conceptual uncertainty	Decreased confidence because agreed with initial conceptual uncertainty	Decreased confidence because felt they needed to improve their explanation more	temperature & thickness to resolve initial conceptual uncertainty. Relied on all PR's to revise response.
lvy	Struggled with epistemic uncertainty; unsure if temperature choice was best for onions	Increased confidence because PR agreed with them; mentioned wanting to improve response	Increased confidence because PR agreed with them; mentioned wanting to improve response	Decreased confidence because agreed with initial epistemic uncertainty	Decrease in confidence because agreed with initial epistemic uncertainty	Changed their temperature to resolve their epistemic uncertainty. Relied on all PR's to revise response.
Philodendron	Struggled with epistemic uncertainty; noticed the data conflicted and was unsure how to manage that	Maintained low confidence because the PR did not help them resolve their uncertainty	Maintained low confidence because the PR did not help them resolve their uncertainty	Decreased confidence because did not help them resolve initial epistemic uncertainty	Maintained low confidence because the PR did not help them resolve their uncertainty	Changed their temperature and thickness to better manage their epistemic uncertainty. All PR interactions pushed Philodendron to revise argument.
Daisy	Struggled with epistemic uncertainty; noticed data was conflicting and was unsure how to manage that	Increased confidence because the PR agreed with their initial selection	Slight decrease in confidence because the PR had pointed out issues with response; still felt confident in initial claim	Decreased confidence by causing student to reflect on initial uncertainty management strategy	Maintained confidence; felt the PR was too vague to act on	Changed temperature to better manage the conflicting data in their response; Relied on Praise/Stylistic, Praise/Solution, and Counterargument PR to improve response.
Rose	Struggled with epistemic uncertainty; unsure what factors, if	Increased confidence because PR agreed with them; mentioned still	Felt less confident because the PR told them they needed to	Decreased confidence by causing student to	Maintained confidence; felt the PR was too	Added more reasoning to second draft that added more justification to

	any should be	feeling uncertain about	add more explanation	reflect on initial	vague to act on	uncertainty management
	prioritized in their	draft one	to their response	epistemic uncertainty		strategy from draft one
	response					
	Struggled with	Increased confidence	Increased confidence	Decreased confidence	Maintained confidence;	Added more explanation
	conceptual	because PR agreed with	because PR agreed with	because agreed with	felt each PR gave	about their initial
Lilly	uncertainty; worried	them; mentioned still	them; mentioned still	initial conceptual	something different to	interpretation of the rate
	about interpretation	feeling uncertain about	feeling uncertain about	uncertainty	consider	constants to improve
	of rate constants	draft one	draft one			response

Group Two: Peer Review Can Provide Feedback for Improvement

Student	Draft One	Praise & Stylistic	Praise & Solution	Counterargument	Vague Criticism	Revision
	Utilized 2 out of		Slightly less confident	Slightly less confident		
	3/middle ground	Still confident because	because felt their	because the PR	Maintained slightly	Added more evidence
	reasoning;	the PR agreed with	response needed	disagreed with their	lower confidence;	and reasoning to address
Tulip	acknowledged they	them; agreed with	improvement; agreed	initial draft; felt PR	referenced initial areas	suggestions from each
	could add more	suggestion from the PR	with PR, referenced	just prioritized	for improvement	peer review
	evidence to argument		initial areas for	something different		
			improvement			
	Utilized prioritized		Slightly less confident	Slightly less confident		Added more evidence
	moisture	Still confident because	because felt their	because the PR	Maintained slightly	and reasoning to address
Azalea	content/middle	the PR agreed with	response needed	disagreed with their	lower confidence; felt	suggestions from
	ground reasoning; felt	them	improvement; agreed	initial draft; felt PR	the PR was too vague	praise/solution and
	good about initial		with PR	just prioritized	to act on	counterargument PR.
	draft			something different		
	Utilized prioritized			Slightly less confident		Added more evidence
	moisture	Still confident because	Slightly less confident	because the PR	Maintained slightly	and reasoning to address
Orchid	content/middle	the PR agreed with	because felt their	disagreed with their	lower confidence; felt	suggestions from
	ground reasoning; felt	them; agreed with	response needed	initial draft; felt PR	the PR was too vague	praise/stylistic,
	good about initial	suggestion from the PR	improvement; agreed	just prioritized	to act on	praise/solution, and
	draft		with PR	something different		counterargument PR
	Misinterpreted	Still confident because	Slightly less confident	Slightly less confident	Slightly less confident	Addressed original
	moisture content	the PR agreed with	because felt their	because the PR helped	because felt their	misinterpretation in
Carnation	graph; felt confident	them; agreed with	response needed	them to identify their	response needed	response, relied on all PR
	in initial draft	suggestion from the PR	improvement; agreed	initial	improvement; agreed	to improve their response
			with PR	misinterpretation	with PR	
						Included more evidence
		Maintained high	Maintained high	Decreased in	Maintained confidence;	and reasoning to better
Laceleaf	Felt confident with	confidence; agreed	confidence; agreed	confidence; countered	felt the PR was too	explain initial variance
	initial draft; utilized	with PR that they could	with PR that they could	the PR using variance	vague to act on	reasoning; relied on
	variance reasoning	improve their response	improve their response	reasoning		praise/solution and
						counterargument PR to
						revise argument

Fern	Felt confident with initial draft; utilized variance reasoning	Maintained high confidence; didn't think professionalism was important to warrant a revision	Slight decrease in confidence; agreed with PR that they could improve their response	Maintained confidence; countered the PR using variance reasoning	Maintained confidence; felt the PR was too vague to act on	Included more reasoning in revision that explained why they prioritized the MC more. Relied on praise/solution and counterargument PR to revise argument.
Lavender	Felt confident with initial draft; utilized variance reasoning	Maintained high confidence; agreed with PR that they could improve their response	Slight decrease in confidence; agreed with PR that they could improve their response	Slight decrease in confidence; countered the PR using variance reasoning	Maintained confidence; felt the PR was too vague to act on	Added more evidence and reasoning to response. Relied on praise/stylistic, praise/solution, and counterargument PR to revise argument
Aster	Felt confident with initial draft; utilized 2 out of 3/Middle ground reasoning	Maintained high confidence because the PR agreed with them	Maintained high confidence; agreed with PR that they could improve their response	Maintained high confidence; countered the PR using variance reasoning	Maintained confidence; felt the PR was too vague to act on	Added more evidence and variance reasoning to response. Relied on praise/stylistic, praise/solution, and counterargument PR to revise argument.
Jasmine	Felt confident with initial draft; utilized middle ground reasoning	Maintained high confidence; didn't think professionalism was important to warrant a revision	Maintained high confidence; agreed with PR that they could improve their response	Decrease in confidence; countered the PR using variance reasoning	Maintained confidence; felt the PR was too vague to act on	Added more evidence and variance reasoning to response. Relied on praise/solution and counterargument PR to revise argument.

Group Three: Peer Review Provides Confirmation

Student	Draft One	Praise & Stylistic	Praise & Solution	Counterargument	Vague Criticism	Revision
	Felt confident with	Increased confidence	Increase confidence	Maintained high	Maintained confidence;	No revision, felt initial
Amaryllis	initial draft; utilized	because PR agreed with	because PR agreed with	confidence, felt their	felt the PR was too	decision was still correct
	compartmentalize	them	them, so their response	initial draft was still	vague to act on	after revisiting data
	reasoning		was correct	correct		
	Felt confident with	Increased confidence	Remained confident	Slightly less confident,	Slightly less confident,	
	initial draft;	because PR agreed with	because the PR agreed	worried their initial	worried their initial	No revision, felt initial
Peony	misinterpreted the	them, so their response	with them; did vaguely	draft was not	draft was not	decision was still correct
	rate constant data	was correct	mention they could	supported with data	supported with data	after revisiting data
			improve their response			
	Felt confident with	Increased confidence	Increased confidence	Slightly less confident	Maintained confident;	No revision, felt initial
	initial draft; utilized	because PR agreed with	because PR agreed with	because the PR	felt PR came from	decision was still correct
Poppy	middle ground/2 out	them, so their response	them, so their response	disagreed with them,	someone who didn't	after revisiting data

of 3 reasoning	was correct	was correct	but still felt they were	understand assignment	
			correct		