EID-500 Needs Assessment

Perform a needs assessment on your selected target audience by completing the prompts below. Use your textbook and other readings to assist in the completion of this template.

Stage 1: Identify and Describe a Performance Problem

Define the Performance Problem	
Write a performance problem statement that you will aim to improve with an instructional solution.	
In the 6–12 science setting at my current school (focus: Grade 7), many students can state an answer to a phenomenon-based question, but they do not consistently construct complete written scientific explanations using the Claim Evidence Reasoning (CER) framework (i.e., a clear claim supported by appropriate evidence and reasoning that links the evidence to relevant science principles).	
Describe Performance	
Write a description of what the target audience is currently doing, what should be happening, and the difference between the two. You can use similar language to the performance problem statement. Describe any gaps in performance that the instructional solution should address.	
Current Performance:	Students often: • Write a claim but include little or no evidence. • Copy numbers or observations without explaining what they mean. • Omit reasoning, or provide reasoning that restates the claim. • Struggle to connect evidence to a science concept using academic vocabulary. Baseline data: ~50% of students currently score a 2 (proficient) on the 0–2 CER scale.
Desired Performance:	• Students will consistently write CER responses that: • Provide a clear, prompt-aligned claim. • Include accurate and relevant evidence drawn from data (tables, graphs, observations). • Explain the 'why' by linking evidence to an appropriate scientific principle or concept. Performance target: ≥80% of students will score a 2 (proficient) on the 0–2 CER scale.

Performance Gap:	Current proficiency is ~50% scoring a 2; desired proficiency is ≥80% scoring a 2. This represents a 30% point performance gap. The qualitative gap is most pronounced in the Evidence and Reasoning components (McNeill & Krajcik, 2012).

Describe who Identified the Problem and Expectations

Write a brief description of the parties who identified this as a problem and how they determined this problem exists (e.g., feedback, performance data, industry trends). List the expectations for the new instructional solution.

This need was identified through:

- My review of 7th grade science CER assignments and rubric scores (classroom assessment data).
- Patterns observed during guided practice (students frequently asking what counts as evidence or how to write the reasoning).
- Informal feedback from the grade-level/department PLC when calibrating constructed-response scoring.

Expectations for the new instructional solution:

- A small, reusable instructional intervention (e.g., brief mini-lessons, modeling, checklist/job aid, targeted practice) that improves CER proficiency without requiring major schedule changes.
- A shared understanding of 'what a 2 looks like' on the 0–2 scale to support consistent student expectations and feedback (Hattie & Timperley, 2007).

Stage 2: Plan and Conduct Data Collection

Data Collection Plan

Create a plan detailing a variety of diverse data sources and data collection methods that will inform your needs assessment. Explain how each data source and data collection method will support your investigation. Aim to include at least three human and/or non-human data sources.

Following the creation of your plan, collect the data.

Analysis Purpose	Data Source (n-count)	Data Collection Method	Rationale
☒ Learner ☐ Content ☐ Environment	Student CER self-efficacy, confusion points survey (n = all 7th grade science students participating)	Brief anonymous survey during class (Google Form)	Identifies student-perceived barriers (e.g., defining evidence vs. reasoning, interpreting data, confidence). Student voice supports an empathetic design process before solution development (Von Heupt, 2023).

☐ Learner ☒ Content ☐ Environment	Standards, scoring tools review (TEKS/department expectations, CER rubric, exemplars) (n = 1)	Document analysis	Clarifies the essential content and success criteria for a '2' response and ensures alignment between instruction, prompts, and scoring expectations (NRC, 2012).
☒ Learner ☒ Content ☐ Environment	Student work samples (baseline CER prompt) (n ≈ class set; sample 25–40 if needed for time)	Rubric scoring with error analysis	Quantifies current performance (50% scoring 2) and pinpoints the most frequent breakdowns to target in instruction. Work-sample analysis provides direct evidence of performance (McNeill & Krajcik, 2012).
☐ Learner ☐ Content ☒ Environment	Classroom observation during CER writing (n = 2–3 class periods)	Observation checklist and time on task notes	Captures environmental factors (time constraints, directions clarity, access to data displays, pacing) and the real time supports students request, informing feasible delivery and scaffolds.
☒ Learner ☐ Content ☐ Environment	Teacher/SME input (n = 2–4: PLC teammates and/or instructional coach)	Short structured interview or written reflection protocol	Reflection helps to surface patterns across classrooms (common misconceptions, effective scaffolds) and supports consistency in expectations. It also helps to identify non-instructional factors (e.g., prompt design, grading calibration).

Data Collection Summary

Write a summary of your data collection experience. Include challenges that arose, how they were addressed, and what you will do differently in the future when collecting learner data.

Data collection summary (update after completion):

Baseline work samples show ~50% of students earning a 2 on the 0–2 CER scale. Error analysis indicates the most frequent need is explaining reasoning (linking evidence to a science concept) and selecting relevant evidence from data. Student survey responses suggest students want clearer examples/non-examples and a simple checklist for what 'counts' in each part. Observation notes highlight time pressure and varied student stamina for writing.

Anticipated challenges and solutions:

- Time to score: Use sampling (25–40) for error coding, while still recording overall proficiency for the full group.
- Scoring consistency: Calibrate with one grade level colleague using 5–8 shared samples before scoring the set.

- Access needs: Provide sentence stems, word banks, and chunked prompts for Emergent Bilingual (EB)/SPED learners.

Future changes based on findings:

- If evidence selection is the primary barrier, increase modeling using real class data tables/graphs.
- If reasoning is the primary barrier, add a 'because…therefore…' reasoning scaffold and more guided practice with feedback (Graham & Perin, 2007; Hattie & Timperley, 2007).

Stage 3: Determine Learner Needs Using an Empathetic Process

Conduct Analyses with Data	
Analyze Learner Characteristics	
Write a brief description of the target audience and the implications for design using evidence from the data you collected in Stage 2.	
Who is the target audience? (e.g., demographics, total number of individuals)	Target audience: 7th grade science students (typically ages 12–13). The group includes a range of reading and writing abilities, including students who benefit from language supports (e.g., EB learners) and accommodations (SPED/504). Students are expected to explain scientific thinking in writing across units (NRC, 2012).
What motivates these individuals?	• Clear success criteria and points/grades. • Opportunities to explain real-world phenomena and 'figure things out.' • Quick feedback that shows how to improve. • Examples and models that make expectations concrete.
What are their current knowledge levels or competencies related to the topic? List their specific skills or knowledge areas.	• Baseline: ~50% of students score a 2 (proficient) on the 0–2 CER scale. • Many students can state a claim, but struggle to (a) select relevant evidence from data and (b) articulate reasoning that connects evidence to a science concept.
What are their learning preferences or formats? (e.g., (asynchronous, synchronous, self-paced, instructor-led, online, face-to-face, hybrid)	• Short, explicit instruction with teacher modeling. • Worked examples and non-examples. • Guided practice with sentence stems and gradual release. • Visual supports (anchor charts/checklists) and opportunities to revise (Graham & Perin, 2007).
What is their familiarity with and access to different forms of	• Students can typically access assignments through Canvas and 1:1 Chromebooks. • Some students have limited home internet; therefore, core instruction and practice should be completable in class and printable as needed.

technology? (e.g., Wi-Fi, smartphones, LMS)	
What are potential implications the target audience's unique characteristics may have for the design of the instructional solution?	• Keep instruction 'small and repeatable' (mini lessons with routine practice). • Provide consistent language for Claim, Evidence, Reasoning across tasks. • Scaffold reasoning explicitly (because/therefore structure) and model how to pull evidence from tables/graphs. • Build in fast feedback and a checklist for self-assessment to support independence (Hattie & Timperley, 2007).
Analyze the Content	
Describe the essential content. Identify what information is need-to-know and nice-to-know.	
What are the foundational components of the topic or skill being addressed? For any procedural skills, list all steps for completing the task. Reach out to subject matter experts if necessary.	Key terms relating to the Claim-Evidence-Reasoning framework: • Claim: a defensible statement that answers the prompt. • Evidence: accurate, relevant data/observations that support the claim. • Reasoning: an explanation that links the evidence to the claim using a scientific principle or concept. This framework supports students in constructing explanations and engaging in evidence-based scientific argumentation (McNeill & Krajcik, 2012; NRC, 2012).
How long does it take to complete the task?	A proficient CER response should be achievable in at least 15–20 minutes with scaffolds for most students. Students needing additional support may require more time for planning, drafting, and revising.
Are there additional elements that would be nice for the learner to know, but are not crucial?	The 7th grade students must show proficiency in basic unit vocabulary and understanding of content. They should have the ability to interpret a data table and or graph following an investigation or given scenario. The students must also have experience in writing with basic paragraph structure and grade level appropriate grammar conventions.
Analyze the Environment	
Describe the environment where the audience will be engaging with the learning solution (e.g., work, home) and where they will be applying the new skills and knowledge (if different).	
What is the setting for the instruction? What is the setting for the application of the new knowledge and/or skills? Describe the physical layout and space.	The setting is a 7th grade science classroom during daily instruction (warm-ups, labs, station work, and exit tickets), with CER tasks embedded in instruction and assessments. Instruction will occur primarily in class to ensure equitable access.

Are there any technological requirements or limitations? (e.g., devices, software, internet)	Each student will need access to a Chromebooks with Canvas access to support digital submission. Limitations include variable typing skills. A printable option and allow handwriting when needed.
What support systems will be available? (e.g., mentors, tech support)	The teacher can set up individual conferencing and or small group supports. Students can participate in peer review using a checklist. They may also use an anchor and exemplars for reference.
Are there any compliance or policy requirements for this instruction?	Students who are designated as 504/ SPED must be provided with their accommodations. Those accommodations would be differentiated supports such as sentence stems, word banks, chunked prompts and extended time. Campus procedures will be followed when it comes to grading, feedback, and student privacy.
What goals are the organization working towards with this instruction?	The main goal is to improve student performance on constructed responses and scientific explanations across the science curriculum. In addition, it will strengthen writing-to-learn routines that support academic language and reasoning (NRC, 2012).
What are the potential implications the characteristics of the environment may have for the design of the instructional solution?	Potential implications will include making sure the solution is efficient and can fit within class time and support diverse learners. Progress should be monitored through rubric scores and student revisions after feedback.

Barriers to Success

Describe any constraints that may hinder the implementation and effectiveness of your instructional solution. Think about any challenges that might arise for the target audience in a learning experience (e.g., language, accessibility, time constraints, technology). Discuss how using an empathetic process when determining learner needs can help mitigate these challenges.

Potential barriers include:

- Students viewing CER as a 'fill-in-the-blank' task rather than explaining thinking.
- Limited writing stamina and varying literacy levels (especially in reasoning).
- Inconsistent expectations across classes if rubric language differs.
- Time constraints for feedback and revision within a standard class period.
- Misconceptions about what counts as evidence (data vs. opinion).

Empathetic mitigation strategies:

- Use student survey results to address confusion points directly and co-create examples that feel relevant.
- Provide multiple entry points (sentence stems, word banks, graphic organizers) and gradually fade supports.
- Calibrate scoring with PLC and share exemplars so expectations stay consistent.

• Build in quick feedback loops (two ‘glows’ and one ‘grow’ and revision time) to normalize improvement (Hattie & Timperley, 2007; Von Heupt, 2023).

Stage 4: Synthesize Findings and Determine Training Decisions

Synthesize Findings and Make Decisions	
Contextualize the Training Needs	
Based on all the analyses you have done, determine the training needs. Think about any specific needs of the audience. Describe elements of a learning experience that would best support the audience. Keep in mind that these decisions can be iterative and may change as your project progresses.	
Compare the essential content with the target audience’s current skills and knowledge of the topic. Note any missing skills or knowledge that are required to achieve the desired performance. What information and content should the instruction cover?	• Baseline performance shows ~50% of 7th grade science students earning a 2 (proficient) on a 0–2 CER scale. • Work-sample analysis indicates the largest skill gap is reasoning: explaining how evidence supports the claim using a science concept. • Students also need support selecting relevant evidence from data displays. • Student feedback suggests they benefit from clear examples/non-examples and a short checklist for each CER component. Training need: Explicit, scaffolded instruction and guided practice in writing CER explanations, with consistent criteria for what earns a 2 (McNeill & Krajcik, 2012; Graham & Perin, 2007).
What should the setting be for the instruction? (e.g., (a)synchronous, self-paced, instructor-led, online, face-to-face, hybrid)	Deliver the instructional solution within regular 7th grade science class time, embedded in existing content (phenomena/labs). Instruction should be short and repeatable (5–10 minute mini lessons) followed by guided practice and revision. This protects instructional time while improving a high leverage routine used across units.
What other needs of the target audience should be met in the instructional solution? How will the instruction meet these needs?	Additional learner needs to address: • Language scaffolds for academic vocabulary and reasoning. • Clear models of how to pull evidence from tables/graphs. • Opportunities to revise after feedback so students see writing as an iterative process. • Equitable access (printable supports for students with limited tech at home).
What non-instructional recommendations, if any, would you suggest to support the target audience? How could	• PLC calibration: score 5–8 common samples together to align what a ‘2’ looks like. • Common CER checklist/rubric across the grade level to reduce mixed messages.

the instructional and non-instructional solutions complement each other?	• Prompt design: ensure CER prompts include clear data sources and specify what evidence students should use. • Scheduling: plan a consistent 10-minute 'revise window' after feedback when possible.

Provide a Rationale

Defend your early design decisions. Describe how the various contexts and analyses informed the needs you determined. How will this design work to improve the performance problem statement?

A focused instructional solution is appropriate because the gap reflects a teachable performance skill: constructing written scientific explanations. The CER framework provides a research-based structure that helps students move beyond claims to evidence-based reasoning (McNeill & Krajcik, 2012; NRC, 2012). Because adolescent writing improves with explicit strategy instruction, modeling, and practice, the intervention will include:

- Modeling with worked examples and non-examples.
- Sentence stems/graphic organizers that are gradually faded.
- Short, frequent practice opportunities tied to real classroom investigations.
- Quick feedback and revision using a checklist.

This approach is designed to be time-efficient and empathetic, using student feedback to address confusion points before design is finalized (Von Heupt, 2023). Feedback and opportunities to revise are included because they are strongly associated with improved learning and performance (Hattie & Timperley, 2007).

Refine and Translate Needs into Goals

List 2–3 instructional goals (learning objectives) that will help meet the identified need.

HINT: Revisit the performance gap to ensure cohesiveness and alignment.

Instructional Goal 1 (performance outcome):

Increase the percentage of 7th grade science students scoring a 2 (proficient) on the 0–2 CER rubric from ~50% to ≥80% on a post-assessment CER prompt after the instructional intervention.

Instructional Goal 2 (knowledge/skill):

Students will accurately identify and explain the purpose of Claim, Evidence, and Reasoning, and distinguish evidence from opinion in sample responses.

Instructional Goal 3 (application):

Given a grade-level science prompt with a data source, students will write a complete CER response that includes

(a) a prompt-aligned claim,

(b) at least two relevant pieces of evidence from the data, and

(c) reasoning that links evidence to a scientific concept.

Students will use a checklist to revise before submission.

References

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