

Questions That Change

Track how researchers refine an inquiry and combine evidence.

CCSS.ELA-Literacy.WHST.11-12.7 "Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject..."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline how the model team changes its question. Circle checks that prevent an unsupported conclusion. Sources A-B are real starting sources; the team and bus-stop proposal are fictional.

Mapping Heat at Bus Stops

- ① A model team wants to investigate heat at bus stops, but has collected no local measurements. Its first question, 'Which stop is hottest?', cannot be answered from general publications. The team instead asks what evidence could explain differences in summer air temperature near trees and pavement. That question connects to published research while preserving a clear boundary: a study elsewhere is not a measurement at the team's fictional stops. A map of tree cover would also need its own date, location and source before it could support a local claim.
- ② The team begins a short investigation by reading a primary study and measurement guidance. It records each source's question, methods, findings and limitations, then writes a provisional answer that combines the sources. The next research decision follows from a gap in that answer. If timing matters, the team can narrow its inquiry to an afternoon comparison. If its claim extends beyond one setting, it can broaden its reading to another city. The choice must change what the team actually reads and analyzes, not merely add a sentence about future work.

- ③ For a more sustained investigation, the team retrieves further sources and compares their methods with the first study. It distinguishes air readings from surface readings, association from controlled causation, and evidence from assumptions. Its revised report explains whether the additional evidence strengthens, changes or limits the earlier answer. The report includes citations, an account of the scope change, and an unresolved question. The teacher can compare the short memo, subsequent source notes and final report to see that research continued and the team's understanding developed.

Source A

Ziter, Carly D., et al. "Scale-dependent interactions between tree canopy cover and impervious surfaces reduce daytime urban heat during summer." PNAS, 2019. Early-online version, pp. 1-6. DOI: 10.1073/pnas.1817561116.

https://turnerlab.ibio.wisc.edu/wp-content/uploads/sites/43/2021/12/Ziter_et alPNAS2019_UrbanHeat-1.pdf

Editorial summary: Measured summer air temperatures varied with tree canopy and paved cover.

Limits to examine: Read the abstract and Methods on page 5. Examine the setting, sampling and limits before transferring findings elsewhere.

Source B

"Measuring Heat Islands." U.S. Environmental Protection Agency, updated 10 Mar. 2026.

<https://www.epa.gov/heatislands/measuring-heat-islands>

Editorial summary: This guidance connects research objectives to the location, timing and type of temperature evidence needed. Air and surface measurements answer different questions. It recommends consistent measurement methods and documenting study context.

Limits to examine: Read the objectives, data-needs and key-considerations sections. This is a decision framework, not a completed assessment of your neighborhood.

2 ANSWER WITH EVIDENCE Use the passage and sources

- 1 Why can the model team not answer its first question from general publications alone?

2 What completed work marks the end of the team's first, short investigation?

3 Give one narrowing move and one broadening move described in the model. How would each change the reading?

4 What must the final report explain about the relationship between the earlier answer and the additional evidence?

3 YOUR TURN _____ Your own words

Supplies: internet, a research database or repository and a document tool. Use four sessions across a week, including time between drafts. The memo and report are separate documents; these lines record progress. No outdoor measurements or paid sources are required.

Conduct a short inquiry, then extend it into a sustained investigation about tree cover, pavement and heat near bus stops. Submit the first memo, expanded source log and revised research report; do not invent local observations.

1. Complete a short investigation

Write your own focused question. Read A's abstract and Methods, and B's specified sections. Log the sources' main claims, evidence, methods, limits and citation details. Write a two-paragraph memo answering your question by connecting both sources. Cite each borrowed idea and identify a genuine gap in your answer. Save the memo before continuing.

Record your initial question and the gap identified in your completed memo.

2. Change scope and extend the search

Use that gap to narrow or broaden your question; explain the change. On later sessions, search a database or repository and read at least two additional credible sources, including another primary study. Keep search terms, retrieval dates and full citation details. Revisit a search or source after comparing evidence. If a source is irrelevant, document why and replace it; finish with four relevant sources.

Record the revised question and one later source that changed your understanding.

3. Compare and synthesize

Organize a four-source log by claim, supporting evidence, methods, setting and limitation. Compare two sources directly, noting agreement or differences in what they measured. Write a four-paragraph report: revised question and answer; integrated evidence; an alternative explanation or counterclaim and response; then limits and an unresolved question. Use all four sources substantively. Explain how the later investigation changed or qualified your first memo.

Record a specific difference between your first answer and final conclusion.

4. Revise, document and submit

Use MLA consistently: cite borrowed ideas at the point of use and provide an alphabetized Works Cited list with author (if given), title, container, date and URL or DOI. Add page numbers only for the version actually read. Verify paraphrases and quotations against the originals. Follow class rules for technology and AI; disclose substantive allowed help or accurately state 'none'. Submit the finished report, source log, earlier draft and these records.

Record the final report title, one verified citation and your AI-use statement.

PART 1 • READ AND MARK

Underline how the model team changes its question. Circle checks that prevent an unsupported conclusion. Sources A-B are real starting sources; the team and bus-stop proposal are fictional. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	Why can the model team not answer its first question from general publications alone?	It has no local measurements identifying which fictional stop is hottest. General publications provide background rather than that missing local comparison.
2	What completed work marks the end of the team's first, short investigation?	The team reads the initial sources, records their evidence and limits, and writes a provisional answer that combines them.
3	Give one narrowing move and one broadening move described in the model. How would each change the reading?	Narrowing to afternoon conditions focuses the evidence sought; broadening to another city adds evidence from a different setting to test how far a claim transfers.
4	What must the final report explain about the relationship between the earlier answer and the additional evidence?	It must explain whether later evidence strengthens, changes or limits the earlier answer, with a documented scope change and remaining question.

PART 3 · YOUR TURN (SAMPLE ANSWER)

Illustrative development: an initial memo may propose investigating shade; later reading may show that the inquiry needs a clearer time period or temperature measure. A revised report should explain that change with evidence from the student's actual four sources. It should not turn a published association into a guaranteed local outcome. This example is not a completed investigation.

Check a citation against the consulted version: a reference to A's Methods can use (Ziter et al. 5). A reference to B can use ("Measuring") because the supplied entry starts with its title and the webpage has no page numbers.

Assess actual read sources, notes, changed questions and completed reports, not a proposed investigation. Require evidence to support the answer and limits, with sources connected in the writer's reasoning. Do not accept invented bus-stop measurements or a generic future plan. Source A is an early-online PDF numbered 1-6; use those locators when citing that version. Source-card metadata and URLs provide a starting point for Works Cited; students must check and format the versions they actually consult. Arrange real source access if needed. Require two completed stages separated by further reading: the two-source memo and the four-source revision, including an additional primary study. A longer version of the same plan does not demonstrate sustained research.