Evidence Under Shade

Evaluate sources, identify research gaps, and refine an inquiry.

ELA.11.C.4 "Researching"

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Number the three sources, underline the evidence each source provides, and circle each limit or research gap so you can judge what the team still needs to investigate.

Studying Heat at Bus Stops

1. During a heat wave, a student team investigates this question: Which changes could reduce heat exposure at unshaded neighborhood bus stops? The team defines exposure as the direct sun and hot surfaces riders experience while waiting. Its first source is an Environmental Protection Agency webpage from the Heat Island Reduction Program, updated in 2023. The page explains that trees and vegetation provide shade and can lower surface and air temperatures. Because a federal agency maintains the page, it is credible and current. However, it does not measure conditions at bus stops, so it cannot show which stops need help first.

2. Next, the team finds a 2019 peer-reviewed study in Proceedings of the National Academy of Sciences by Carly Ziter and colleagues. Using summer temperature measurements in Madison, Wisconsin, the researchers found that daytime cooling increased substantially when tree canopy cover reached about 40 percent. The study offers measured evidence, and peer review strengthens its credibility. Still, Madison's climate, street design, and canopy pattern differ from those of the team's city. The article also examines neighborhood-scale canopy rather than a single waiting area. The team can use it to support investigating shade, but not to predict an exact temperature change at one stop.

3. Finally, the team locates a 2024 transit agency report that lists shelters, weekday boardings, and accessibility features for every route. It identifies 38 high-boarding stops without shelters, making it useful for choosing sites. Yet the report includes no air-temperature, surface-temperature, or shade measurements. The team therefore narrows its inquiry: At the ten busiest unshaded stops, how much do a shade structure and nearby trees change a rider's heat exposure between 2:00 and 5:00 p.m.? To answer, members will compare shaded and unshaded stops on similar days, record temperatures with the same tools, and consult a city arborist about which trees can survive locally.

2 ANSWER WITH EVIDENCE

Use the passage

1. Why is the EPA webpage a credible source, and what important information does it not provide?

2. What finding from the Ziter study supports investigating tree shade, and what limits applying that finding directly to the team's city?

3. How can the transit agency report help the team choose research sites, and why can it not answer the heat-exposure question by itself?

4. How did the team refine its original question, and what comparison will it make to answer the refined question?

3 YOUR TURN

Your own words

Choose a school or community issue you could investigate. Write one focused research question, then name three sources you would use and explain what each source could show, including one reason it is reliable or one limit it has.

ANSWER KEY

Evidence Under Shade

GRADE 11 · ELA.11.C.4

PART 1 · READ AND MARK

Number the three sources, underline the evidence each source provides, and circle each limit or research gap so you can judge what the team still needs to investigate. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Why is the EPA webpage a credible source, and what important information does it not provide?	**It is maintained by a federal agency and was updated in 2023. It does not measure conditions or identify needs at specific bus stops.**
2	What finding from the Ziter study supports investigating tree shade, and what limits applying that finding directly to the team's city?	**The study found substantially greater daytime cooling at about 40 percent tree canopy cover. Madison differs in climate, street design, and canopy pattern, and the study was not about individual bus stops.**
3	How can the transit agency report help the team choose research sites, and why can it not answer the heat-exposure question by itself?	**It identifies high-boarding stops without shelters. It has no air-temperature, surface-temperature, or shade measurements.**
4	How did the team refine its original question, and what comparison will it make to answer the refined question?	**It narrowed the question to the ten busiest unshaded stops, a specific time period, and shade structures and trees. The team will compare shaded and unshaded stops on similar days using the same temperature tools.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Question: Would moving Central High School's first bell from 7:20 to 8:20 increase students' average sleep on school nights? 1. An anonymous survey of Central High students could show local sleep patterns, although self-reports may be inaccurate. 2. The American Academy of Pediatrics' school-start-time policy provides expert, research-based evidence about adolescent sleep, but it does not describe this school. 3. The district transportation office's current bus-routing report can show scheduling constraints; it is a reliable local record, but it cannot show whether students would sleep longer.

Accept equivalent explanations that distinguish a source's credibility or relevance from its limits. For the open task, accept varied topics when the question is focused and the three sources have clear, appropriate purposes and evaluations.