Methods Under Microscope

Choose research methods that fit the question.

PS.1.3 "Compare the appropriate application of experimental and non-experimental research methodologies (e.g., case study, correlation, meta-analysis, and naturalistic observation)."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline each research method named in the passage. Circle one phrase for each method that explains what it can or cannot reveal.

Do Phone Alerts Interrupt Studying?

1 At Cedar High, teachers wonder whether phone alerts interrupt studying. To test cause and effect, researchers could randomly assign students to two groups for the same twenty-minute reading task. One group receives phone alerts; the other keeps phones silent. Both groups use the same passage and take the same quiz. If their scores differ, random assignment and matched conditions make alerts a more convincing explanation than students' usual study habits. This experiment is useful when researchers can safely change a condition, but its short, controlled task may not match how students study at home.

2 Suppose researchers cannot control students' phones after school. They could survey students about daily alerts and compare the answers with quiz scores. A correlation would show whether higher alert counts tend to go with lower scores, but other factors, such as sleep, might explain the link. To see what students actually do in their usual setting, researchers could quietly observe a study hall without changing phone rules. This naturalistic observation captures behavior in context, yet it cannot isolate the effect of alerts. A case study of one student who reports unusual trouble concentrating could give detailed interviews and records, not a typical result for everyone.

3 The principal wants to know whether the finding applies beyond Cedar High. Instead of running one more study, researchers could conduct a meta-analysis, combining results from several studies on alerts and attention. This can reveal a broader pattern than a single small study, although differences in the studies' methods may complicate the comparison. Choosing a method depends on the question: an experiment best tests whether alerts cause a change under controlled conditions; correlation tracks links when conditions cannot be assigned; naturalistic observation records ordinary behavior; and a case study explores one person's experience in depth. No single method answers every question.

2 ANSWER WITH EVIDENCE

Use the passage

1. A school can safely assign volunteers to two desk layouts for a short task. Why is an experiment more useful than correlation for testing whether layout affects accuracy?

2. A researcher wants to see how students choose cafeteria seats without changing the room. Why choose naturalistic observation rather than an experiment, and what can it not establish?

3. A counselor wants a detailed picture of one student's unusual adjustment to a new school. Why choose a case study instead of measuring correlations across many students?

4. Several schools have published studies on peer tutoring and grades. Why might a meta-analysis be more useful than one new case study for judging the overall pattern? Name one challenge.

3 YOUR TURN

Your own words

Invent a school-related research question that is not about phones. In four sentences, describe an experiment and one non-experimental method you could use to investigate it, giving one strength and one limit of each.

ANSWER KEY

Methods Under Microscope

HIGH SCHOOL · PS.1.3

PART 1 · READ AND MARK

Underline each research method named in the passage. Circle one phrase for each method that explains what it can or cannot reveal. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	A school can safely assign volunteers to two desk layouts for a short task. Why is an experiment more useful than correlation for testing whether layout affects accuracy?	**An experiment lets researchers assign the layouts and keep other conditions the same, making a causal explanation more convincing. Correlation could show a link but not rule out other causes.**
2	A researcher wants to see how students choose cafeteria seats without changing the room. Why choose naturalistic observation rather than an experiment, and what can it not establish?	**Naturalistic observation records students' choices in their usual setting without changing conditions. It cannot establish what caused those choices.**
3	A counselor wants a detailed picture of one student's unusual adjustment to a new school. Why choose a case study instead of measuring correlations across many students?	**A case study can provide detailed interviews and records about that student's experience. Correlation focuses on links across students rather than one person's experience in depth.**
4	Several schools have published studies on peer tutoring and grades. Why might a meta-analysis be more useful than one new case study for judging the overall pattern? Name one challenge.	**A meta-analysis combines results from several studies to look for a broader pattern than one case study can show. Differences in study methods may complicate the comparison.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

My question is whether background music affects how often students lose focus while reading. In an experiment, I would randomly assign students to read the same text with music or in silence and count when they look away; this helps test cause and effect, but the assigned setting may feel unusual. For naturalistic observation, I would watch students in their usual study spaces and count when they look away; this captures ordinary behavior. Because students choose their own spaces, the observations cannot show that music caused any difference.

Accept other well-supported comparisons that match the passage's strengths and limits. For Part 3, check that both methods investigate the same question and that each has a distinct strength and limit.