LESSON 5

Design the Study

Match your method to your question and plan it ethically.

About 120 min | Reading 35 min | Slides 80 min | Quiz 5 min

Learning objective. By the end you will be able to choose a study design that fits your research question and plan it ethically.

Key points

- Your question picks your method: survey, interviews, experiment, documents or a prototype.
- Plan who or what you'll study, how many, and exactly what you'll record.
- If people are involved, get their consent and a teacher's approval before you start.

Learn

Your question decides your design. To describe what's happening, use a survey, observations or existing data. To understand experiences, interviews or case studies work well. To test whether one thing causes another, you need an experiment: change one variable, keep everything else as similar as possible, and compare against a control. Projects can also be historical (studying documents), use secondary data (analysing datasets other people collected), or follow a design cycle where you build, test and improve a prototype.

Plan the details before you start. Who or what will you study, and how many? How will you choose them so your sample isn't biased? What exactly will you measure or record? A small trial run often reveals problems early, like confusing survey questions.

If people are involved, ethics come first. Participants should know what the study is about, agree freely and be able to stop at any time. Keep risks minimal and responses private. Before surveying or interviewing anyone, especially other students under 18, check with a teacher or supervisor. Research with minors usually needs a parent's permission as well as the young person's own agreement.

Example

> Aisha wants to know whether music helps classmates memorise vocabulary. Her design: 20 volunteers each study two equal word lists, one in silence and one with music. Half do the music round first and half do silence first, so the order doesn't skew the results. She measures words recalled after 10 minutes. Her teacher reviews the plan and she collects signed permission forms. No names are recorded, and anyone can drop out at any time.

Across disciplines

Lab sciences rely on controlled experiments, while social scientists often use surveys, interviews or observation. Historians design around which archives and documents to examine, and engineers design

around requirements, prototypes and test criteria.

Watch

Psychological Research: Crash Course Psychology #2, CrashCourse (11 min): youtube.com/watch?v=hFV71QPvX2I

> **Takeaway.** Pick the design that fits your question, plan the details in advance, and protect anyone who takes part.

Try it: Match the method

Name: _____ Date: _____

1. Write your research question at the top of a page.

2. Decide whether it asks you to describe, understand experiences, test a cause, interpret texts or build something, and pick a matching design.

3. List your participants or sources, how you'll choose them, and exactly what you'll measure or record.

4. Write a three-line ethics check: Who could be affected? How will you get consent? Which adult will review your plan?

Lesson 5 quiz

Circle one answer for each question. Pass mark: 4 of 5.

1. In the lesson example, Aisha has half her volunteers do the music round first and half do silence first. Why?

A. So she can record each volunteer's name next to their score
B. So the music round always gets the more rested volunteers
C. So the order of the rounds does not skew her results
D. So she needs fewer word lists for the whole study

2. A history student wants to know how wartime letters in the local archive describe food shortages. What should the study design mainly plan?

A. A control group of letters that are kept away from the student
B. A survey asking current residents how they feel about rationing
C. A hypothesis to test by changing one variable in the letters
D. Which archive collections and documents to examine, and how

3. To learn how much sleep students at her school get, a student surveys only her friends in the robotics club. What is the main design problem?

A. Surveys can never be used to describe what students actually do
B. Her sample may be biased and not represent the school
C. She should have run an experiment on sleep instead
D. Robotics club members are not allowed to take surveys

4. A 15-year-old classmate agrees to be interviewed for a club project. What does the lesson say research with minors usually also needs?

A. A signed promise that the classmate will finish the interview
B. Nothing more, because the classmate has already said yes
C. A parent's permission as well as the student's own agreement
D. A payment so the classmate feels the time was worthwhile

5. A student has written a survey for classmates and wants to try it on three friends first. What should happen before anyone, even friends, fills it in?

A. Nothing, because a trial run with friends is not real research
B. A teacher or supervisor reviews and approves the plan
C. Friends sign a form promising to share their answers
D. Send it to everyone now and ask for approval later

Further reading

- **Types of Research Designs**, USC Libraries, University of Southern California. An overview of experimental, descriptive, case study, historical and other designs. https://libguides.usc.edu/writingguide/researchdesigns

- **Study design**, Khan Academy. Free videos and practice on sampling, bias, observational studies and experiments.
  https://www.khanacademy.org/math/statistics-probability/designing-studies
- **Experimental Design and Ethics**, OpenStax Introductory Statistics 2e, Rice University. Covers control groups, random assignment, informed consent and ethics review.
  https://openstax.org/books/introductory-statistics-2e/pages/1-4-experimental-design-and-ethics
- **Research with Children FAQs**, Office for Human Research Protections, U.S. HHS. Official explanation of parental permission and child assent in research.
  https://www.hhs.gov/ohrp/regulations-and-policy/guidance/faq/children-research/index.html