Methods and Materials

ARTICLE SECTION

Methods and Materials

- The methods and materials section tells your reader **'HOW'** you carried out the testing or experiments that were part of your research.

It should include:

- The type of research you conducted
- How you collected and analyzed your data
- Any tools or materials you used in the research
- Why you chose these methods

Why is a methods section important?

Your methods section is your opportunity to share how you conducted your research and why you chose the methods you chose. It's also the place to show that your research was rigorously conducted and can be replicated.

It gives your research legitimacy and situates it within your field.

Explain your methodological approach

Option 1: Start with your "what"
What research problem or question did you investigate?

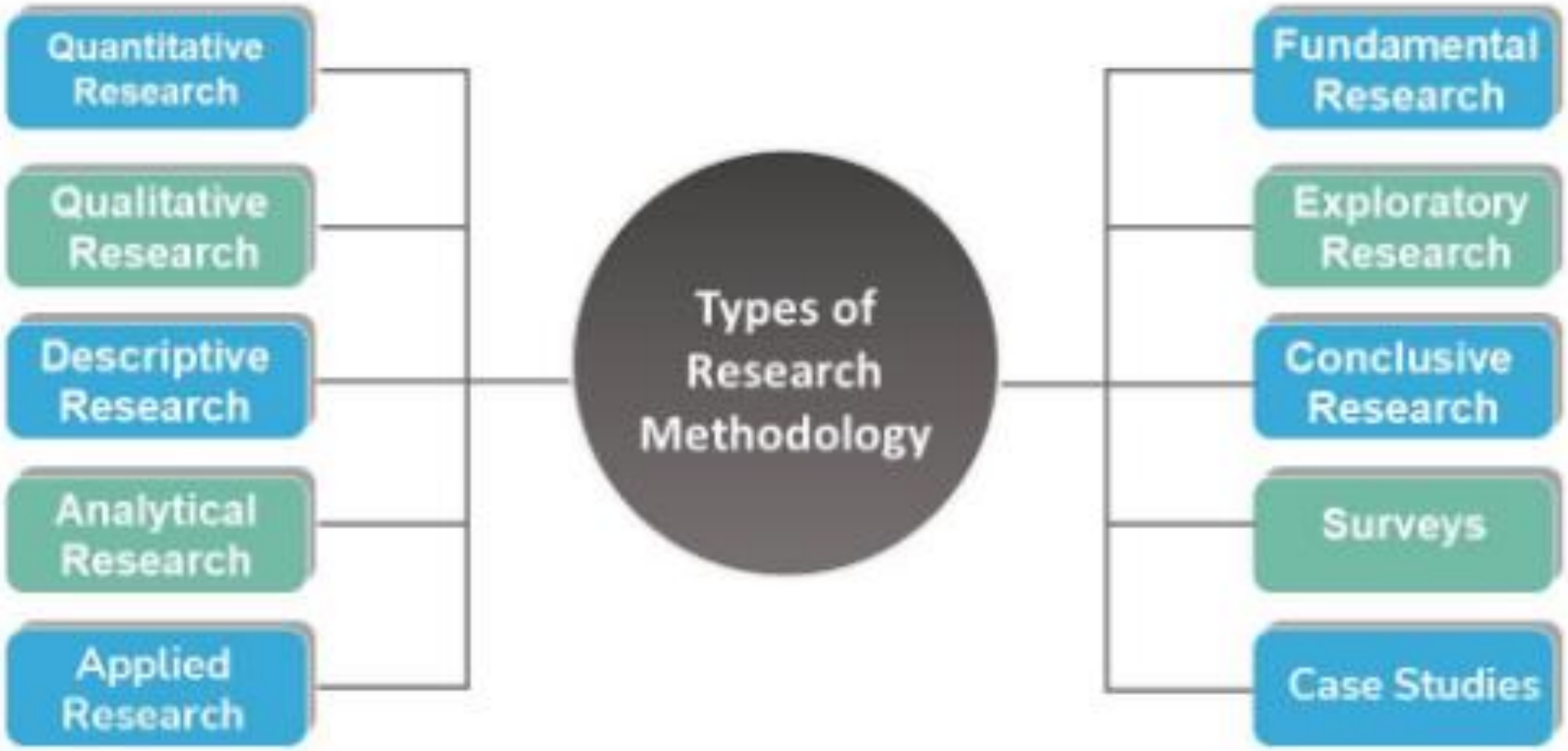
And what type of data did you need to achieve this aim?

- Quantitative data, qualitative data, or a mix of both?
- Primary data collected yourself, or secondary data collected by someone else?
- Experimental data gathered by controlling and manipulating variables, or descriptive data gathered via observations?

Option 2: Start with your "why"

- Depending on your discipline, you can also start with a discussion of the rationale and assumptions underpinning your methodology. In other words, why did you choose these methods for your study?

Types of Research Methodology



Describe your research methods

A Useful word combinations

method
- an effective
- a reliable
- an alternative
- a common
- the traditional

to use
to employ (more formal)
- a method, a methodology
- a technique, a procedure
- an approach
- an instrument, a device[1]

to carry out / conduct
- a procedure
- an experiment
- a pilot study[2]
- a survey

apparatus[3]
- is assembled
- is checked

[1] object or piece of equipment
[2] preliminary study
[3] equipment for a lab experiment.
Apparatus is an uncountable noun but you can talk about a *piece of apparatus*.

26.1 **Complete the sentences using words from A opposite. There may be more than one possible answer.**

1 It was a new ..... of apparatus so we brought together all the things we needed and ..... it first. We then ..... it before using it.

2 The team carried out a .... before conducting the main ..... to see if the ..... they were using was reliable.

3 The team needed to employ a different ..... for measuring the pressure, so they used a new ..... which they manufactured in their own laboratory.

4 The researchers found the ..... method of collecting data that was usually used did not work well for their purposes and so they had to find a more ..... method.

Types of research method

method	what the researcher does	limitation of method
exploratory study	carries out a **preliminary** study of something not previously researched	often uses small samples so conclusions can only be **tentative**[1]
experimental study	**manipulates**[2] a **variable** [anything that can vary] under **controlled conditions** to see if this produces any changes in a **dependent variable**	done in the highly controlled conditions of the **laboratory –** these conditions are **artificial**[3] and may not **reflect** what happens in the more complex real world; other researchers often try to **replicate**[4] successful experiments
correlational study	attempts to **determine** the **relationship** between two or more variables, using **mathematical techniques** for summarising data	only shows that two variables are related **in a systematic way**, but does not **prove** or **disprove**[5] that the relationship is **a cause-and-effect relationship**
causal study	attempts to prove a cause-and-effect relationship	difficult to **eliminate** other variables in order to demonstrate a clear **causal relationship**
naturalistic (empirical) observation (also known as **field study)**	**observes** and **records** some behaviour or **phenomenon**[6], often over a prolonged period, in its **natural setting** without **interfering with**[7] the **subjects** or phenomena in any way	can be very **time-consuming** as researcher may have to wait for some time to observe the behaviour or phenomenon of interest; difficult to observe behaviour without **disrupting**[8] it
survey	**makes inferences from**[9] data collected via interviews or questionnaires	intentional deception, poor memory, or **misunderstanding** of the question can all contribute to **inaccuracies in the data**
case study	keeps **in-depth**[10] descriptive records, as an **outside observer**, of an individual or group	often focuses on a single individual and this person may not be **representative** of the general group or **population**
longitudinal study	follows the same **sample** [e.g. group of people] **over time** and makes repeated observations	takes a long time to **gather results**; maintaining the same sample can be difficult over time

[1] uncertain [2] makes changes to [3] not natural [4] do in exactly the same way [5] show something is not true [6] something that exists and can be seen, felt, tasted, etc. [7] altering [8] making it change [9] comes to conclusions on the basis of [10] detailed

Choose the correct words to complete the paragraphs.

Scientists disagree as to whether cold fusion, the controlled power of the hydrogen bomb in the laboratory, is possible. In the past, some believed it would be possible to conduct an [1]*experiment / experience* under laboratory [2]*circumstances / conditions* using palladium and platinum electrodes to cause heavy hydrogen atoms to fuse into helium and release energy, as the sun does. Using carefully controlled techniques, researchers believed they could [3]*manipulate / manouevre* the [4]*variations / variables* arising from the complexity of the electrodes and other equipment used. In such [5]*controlled / organised* conditions they argued, cold fusion was possible. However, attempts to [6]*reply / replicate* some of the experiments which claimed to be successful failed, and many now believe that cold fusion is in fact theoretically impossible.

Some linguists believe that we can best [7]*decide / determine* how language is processed by laboratory experiments. However, laboratory experiments are by definition [8]*artificial / superficial* and may not [9]*relate / reflect* what happens in the real world. Other linguists believe, therefore that [10]*empirical / imperial* observation is better, and prefer to carry out [11]*field / land* studies and [12]*casual / case* studies of individuals in natural [13]*settings / sets*. In this way, [14]*in-depth / inaccurate* data can be [15]*collected / completed* by observers without [16]*interrupting / interfering* with the process in any way, even though this may be a more [17]*time-consuming / time-wasting* method. However, individual studies in real situations may not be [18]*representative / relevant* of the general [19]*people / population* of second language learners. In short, both approaches have their advantages and disadvantages.

Match words and expressions in B opposite with the less academic synonyms below.

1 indefinite and not certain
2 show something is not true
3 rule out something as a possibility
4 at different points in time
5 be the same as
6 makes a note of
7 draws conclusions
8 failure to understand
9 initial
10 repeat
11 watches
12 typical

Correct the eight spelling and vocabulary mistakes in the sentences.

1 It was very difficult to make clear interferences from the data as we had so little.
2 A correlational study is a good way of seeing if one phenomena is related to another in a system way.
3 The experiment neither proved nor deproved Jessop's theory.
4 An exterior observer can often unintentionally erupt the behaviour of the subjects they are observing.
5 The method they initially chose to use was not a very reliant one, so he had to find an alternator.