Research Basics

Oskar Blakstad 723.3K reads

The research process deals with the ways and strategies used by researchers to understand the world around us. This is a guide to basic elements of scientific research.

Research Methods [1]

Formulating questions, collecting data, testing hypotheses

Experimental Research [2]

Setting up experiments
What is Research?

What is Research? [5]

Basics of the Scientific Method [6]

What is Empirical Research? [7]

What is the Scientific Method? [8]

Definition of Research [9]

Definition of the Scientific Method [10]

Definition of Science [11]

Steps

Steps of the Scientific Method [12] - The scientific method has a similar structure to an hourglass - starting from general questions, narrowing down to focus on one specific aspect [13], then designing research where we can observe and analyze this aspect.

At last, the hourglass widens and the researcher concludes [14] and generalizes [15] the findings to the real world.
Aims of Research

The general aims of research [16] are:

- **Observe** [17] and Describe
- **Predict** [18]
- **Determination of the Causes** [19]
- Explain

Purpose of Research [20] - Why do we conduct research? Why is it necessary?

Elements of Research

Common scientific research elements [21] are:

Characterization - How to understand a phenomenon

- Decide what to observe [22] about a phenomenon
- How to define the research problem [13]
- How to measure [23] the phenomenon

Hypothesis [24] and Theory [25]

- The research questions [13] before performing research
- Almost always based on previous research
Prediction [18]

- What answers do we expect?
- Reasoning [26] and logic on why we expect these results

Observation [17] or Experimentation [2]

- Testing characterizations, hypothesis [27], theory and predictions
- Understanding a phenomenon better
- Drawing Conclusions [14]

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Links
[1] https://explorable.com/research-methodology
[3] https://explorable.com/research-designs
[5] https://explorable.com/what-is-research
[8] https://explorable.com/what-is-the-scientific-method
[9] https://explorable.com/definition-of-research
[12] https://explorable.com/steps-of-the-scientific-method
[15] https://explorable.com/what-is-generalization
[16] https://explorable.com/aims-of-research
[17] https://explorable.com/observational-study
[18] https://explorable.com/prediction-in-research
[20] https://explorable.com/purpose-of-research
[21] https://explorable.com/scientific-elements
[22] https://explorable.com/operationalization
[23] https://explorable.com/scientific-measurements
[24] https://explorable.com/research-hypothesis
[26] https://explorable.com/scientific-reasoning
[27] https://explorable.com/hypothesis-testing