Research Basics

Oskar Blakstad 681.4K 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 Basics

- **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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