



## **Aims Of Research** <sup>[1]</sup>

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- Observe <sup>[3]</sup> and Describe <sup>[4]</sup>
- Predict <sup>[5]</sup>
- Determination of the Causes <sup>[6]</sup>
- Explain

## **Introduction**

The ultimate aims of research are to generate measurable and testable data, gradually adding to the accumulation of human knowledge.

Ancient philosophers believed that all answers could be achieved through deduction <sup>[7]</sup> and reasoning <sup>[8]</sup> rather than measurement <sup>[9]</sup>.

Science now uses established research methods <sup>[10]</sup> and standard protocols to test <sup>[11]</sup> theories thoroughly.

It is important to remember that science and philosophy <sup>[12]</sup> are intertwined and are essential elements of human advancement, both contributing to the way we view the world. Scientific <sup>[13]</sup> research, however, allows us to test hypotheses <sup>[11]</sup> and lay solid foundations for future research and study.

No theory <sup>[14]</sup> or hypothesis <sup>[15]</sup> can ever be completely proved or disproved, but research enables us to make valid assumptions about the universe.

### **Reasoning Cycle Scientific Research**

This gradual accumulation of knowledge dictates the overall direction of science and philosophy <sup>[12]</sup>.

## **Observation and Description**

The first stage of any research is to observe <sup>[3]</sup> the world around us and to ask questions about why things are happening.

Every phenomenon in the universe has a reason behind it, and the aims of research are to understand and evaluate what is happening.

However simple the phenomenon or however easy it appears to be to generate logical and intuitive answers, scientific research [16] demands rigorous testing for a truth to be accepted.

Describing the overall behavior of the subject is the first stage of any research, whether it is a case study [17] or a full-blown 'true experimental design' [18].

Read more about descriptive research here [4].

## Predict

This stage is where you must make a statement of intent and develop a strong hypothesis [11]. This must be testable [19], with aims of research being to prove or disprove this statement [20].

At this stage, you may express your personal opinion, favoring one side or the other. You must make a statement predicting [5] what you expect the final answer to be.

You must, however, keep an open mind and understand that there is a chance that you may be wrong. Research is never about right or wrong but about arriving at an answer, which improves our knowledge of natural processes.

## Determination of the Causes

This is often the 'business end' for many areas of scientific research and is where one of the predictions [5] is tested, usually by manipulating [21] and controlling [22] variables. The idea is to generate numerical data that can determine the cause [6] with one of the many statistical tests.

For example, a small-scale global warming study might study Antarctic ice cores to determine the historical levels of carbon dioxide throughout history. In this experiment, time would be the manipulated variable, showing how levels of the greenhouse gas have changed over time.

Statistical [23] procedures are then utilized to either prove or disprove the hypothesis and prediction.

Of course, very little research [16] gives such a black and white answer, but opens up new areas of potential study and allows scientists to focus on a specific direction.

## Explain

After determining the causes, the next layer of the research process is to try to find possible explanations of 'Why?' and 'How?' things are happening.

For most areas, this stage involves sifting through and reviewing earlier studies about similar phenomena. Most research is built upon the work of previous researchers, so there should be a wealth of literature [24] resources available.

If we look at a topical example, Global Warming is an area with which most of us are familiar and has been the subject of thousands of studies. Intuitively, most of us would state that humanity pumping carbon dioxide into the atmosphere is responsible for a worldwide rise in

temperatures.

The aims of research [25] may be to establish 'What are the underlying causes and relationships between the different processes fueling this trend?' In most cases, it is necessary to review earlier research and try to separate the better quality sources from the inaccurate or poorly designed studies.

It is equally important to take into account any opposing points of view and accept that they may be equally valid. Explanation is about coming up with viable reasons and you must try to be as objective and unbiased [26] as possible.

For example, in the case of global warming, there is an opposing view that temperature rises are natural and that the effect of human society is making little difference.

At this stage, personal opinion must be put aside and both sides of the debate must be given equal credence.

## New Directions

Whatever the final answer, it can be used to promote a healthy debate and discussion about the validity [27] of the results [28].

The aims of research can then be fine-tuned, or may serve to open up new areas of interest. Either way, the store of human knowledge has been enriched and increased.

## Bibliography

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