

# [Free essay on scientific method](https://assignbuster.com/free-essay-on-scientific-method/)

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The scientific method is based on four basic steps. Firstly there is an observation of a phenomenon. Secondly, a hypothesis is formed which takes the form of an if-then statement. Thirdly, a hypothesis is used to make predictions of what will occur. Finally, those predictions are tested in a series of experiments (What is the “ scientific method”?, 1998). The purpose of the scientific method is to create a road map that can be easily replicated by someone if they wanted to test to see if your conclusions were accurate. A hallmark of good science is the reproducibility of results, that is, the results should be largely the same if two different people perform an experiment at two different times. Another critical component of the scientific method revolves around the falsifiability of the hypothesis or theory being tested. Falsifiability means that there is a set of observations that would render the hypothesis or theory incorrect (What is the “ scientific method”?, 1998). Reproducibility is important to invention and innovation because without it the observations and solutions would not be applicable to people at large and thus useless.
Pseudoscience is the presentation of a claim in scientific form, which in fact does not conform to any rigorous scientific inquiry. Pseudoscience often uses vague and claims that cannot be proven to assert the validity of what it “ measures.” Karl Popper believed that falsifiability was the key distinguishing feature between science and pseudoscience. A pseudoscientific claim was thus a claim that could never be proven wrong based on how it was formed. Furthermore, Karl Popper viewed scientific status as dependent on falsifiability, refutability, and testability (Popper, 1959).
William Harvey was an English physician born in 1578. His most important contribution to science was the description of the systemic blood circulation, and that the blood was pumped through the body by the heart. He further described the pulsations of the arteries as corresponding to the pumping action of the left ventricle, and that the right ventricle pumps blood into the lungs. Prior to Harvey, Galen’s views held the most sway with physicians. According to Galen, blood moved between the hearts ventricles through invisible pores. Harvey did not fully comprehend bloods circulation though, and believed the arteries were involved in cooling the blood, and the lungs involved in cooling the heart, which was a generator of heat (Wikipedia). Harvey was trained in medicine at the famous University of Padua, one of the few institutions in Europe that engaged in rigorous anatomic studies based on dissection. After his work in Padua he obtained the degree of Doctor of Medicine from the University of Cambridge. Following his training he was appointed the Lumleian lecturer at the Royal College of Physicians in London (Wikipedia).
Harvey’s influence on modern medicine and science is immense. Prior to his lectures regarding anatomy he laid out several rules that are still held in esteem by practicing physicians today. Furthermore, Harvey was an avid anatomist and performed many experimental dissections and vivisections. He was the first western physician to understand that blood moved in only one direction, and he rejected the dominant view at the time that the liver also formed a locus of blood circulation. Harvey was also the first scientist to examine a heartbeat, and he was the first to discover that the outflow of the heart had to be constant and return the same constant amount to the heart through the veins. It has been said that Harvey’s experiments in physiology and circulation was the first proper explanation of an organic process and the start of modern physiology (de Micheli, 2005).

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