

Making reference to Galileo's scientific method,  
explain what is the relationship between  
hands-on experimental work and knowledge in  
the natural sciences

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# 1 Galileo's Scientific Method

Galileo's scientific method can be broken down into two main parts. The first part consists of observing and analyzing the phenomenon that the scientist is studying, and the second part consists of verifying and documenting the phenomenon in order to make it reproducible, which is critical in order to be able to verify the hypothesis. Galileo, in a letter to Cristina di Lorena, refers to the first part of the scientific method as "sensata esperienza", to emphasize the fact that hands-on experimental work is a vital portion to achieving knowledge in natural sciences. But Galileo's method isn't only inductive, it's both deductive and inductive at the same time. He makes this clear in his writings (Dialogo) that even though there is a predominance of experimental induction over theoretical deduction, they aren't mutually exclusive. He in fact thinks that the "sensate esperienze" are based on "necessarie dimostrazioni", which means that our observation of the world should be based on some basic rules that are easily deductible, what today we would call axioms.

## 1.1 The paradox of Galileo's scientific method

The coexistence of inductive and deductive approaches creates a paradox. This is because for Galileo the "necessarie dimostrazioni" are based on "sensate esperienze" and that this "sensate esperienze" are based on "necessarie dimostrazioni", so it is worthless to have one without the other. Because of this, for Galileo science is composed of these two elements, this is why his method enforces that an hypothesis can't be created or even conceived if it isn't based on an inductive and deductive approach at the same time.