

REVAMPING THE ‘SCIENTIFIC METHOD’: A UNIFYING FRAMEWORK FOR SCIENTIFIC LITERACY

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ABSTRACT

Despite long-standing criticism from scientific and philosophical communities, the hypothetico-deductive model still forms the foundation of the ‘scientific method’ as typically taught at primary, secondary and some tertiary education levels. In an age of heated debate over critical scientific findings, the growing need for scientific literacy is hindered by this educational reliance upon an out-dated and unrealistic account of science. A working revision of the ‘scientific method’ is proposed in this paper, comprising a set of theoretical postulates and a system for diagramming research inquiry and method. Encompassing key 20th Century epistemological developments, this Framework aims to (1) clarify scientific vocabulary, (2) incorporate core scientific concepts such as validity, replication and representativeness, (3) clarify and detail the relationship between theory and observational data, and (4) provide a realistic account of the nature of, and challenges to, high-quality research design. Commonly applicable across all empirical disciplines and scalable in complexity, the framework’s potential to act as a united foundation underpinning scientific literacy from primary levels through to professional research practice is explored.

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