

6 - Nature of Science: History, Philosophy and Sociology of Science | Empirical

WS - (16016) - MODERNISING VIEWS ON SCIENTIFIC METHODS IN AN UNCERTAIN WORLD

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Short Abstract

The workshop will build on established research that far too often students are exposed to an overly simplistic accounts of 'the scientific method'. The mythical 'scientific method' is frequently taught in a singular and linear fashion, starting with a hypothesis which is then tested through a recipe-like experiment. A key contribution of the workshop is to challenge this simplistic account of 'the scientific method' which is not reflective of the nature of science and activities of scientists. The workshop will showcase teaching, learning and assessment designed during a three-year project that involved a collaboration between a university in England and one of the leading exam boards in the UK. The workshop resources will be presented from science educator perspective. They explain how to broaden the view of scientific methods and how to incorporate the ideas into lessons. The project used a theoretical framework that proposed a variety of methods called Brandon's Matrix. Brandon (1994) provides an account of a diversity in scientific methods which shows that not all experiments rely on hypothesis testing and that not all descriptive work is non-manipulative. Brandon represents the connections between experiments and observations in terms of a matrix (i.e., two-by-two table) in which an investigation is characterised by whether or not it involves manipulation, of variables and whether it involves an explicit hypothesis test, as opposed to measuring parameters. Although based on the UK curriculum, the materials were designed around topics that are present in science classrooms globally, and workshop participants will gain access to the project resources for their own teaching and assessment needs.