

Understand Research Philosophies and Paradigms in Medical Education

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Why Focus on Philosophy and Paradigms?



Often researchers fail to make their philosophical base explicit – or worse still they are themselves unaware that they have made methodological decisions by default. Any approach to research is based on often contentious philosophical assumptions about these matters. It is important to appreciate how our view on the world can impact on the design and the interpretation of research.

As Scott & Usher, (1996 p.17) note, “research is a social practice carried out by research communities. What constitutes ‘knowledge’, ‘truth’, ‘objectivity’ and ‘correct method’ is defined by the community and through the paradigms which shape its work”. A paradigm is defined as “the entire constellation of beliefs, values and techniques shared by members of a given scientific community” (Kuhn cited in Scott and Usher, 1991, p.15). Two principal paradigms that have predominated in social sciences research since the 19th century are those based around positivism and interpretivism. These inform and shape the views held regarding the research and in turn impact on the ontological, epistemological and methodological choices made. As researchers in medical education we need to be able to discern the underlying assumptions that inform both our own work and the work of others. We need to make decisions regarding the ways in which we set about collecting and interpreting data and we need to be aware of the competing ways of understanding the complex relationships between theory and observation.

Definitions

Research is divided into different types. Each one emanates from different ways of knowing (**ontology**) and how we explain how we know and share our understandings (**epistemology**).

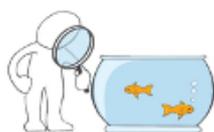
Ontology – What is the subject matter to be investigated? What exists and what is the nature of the world?

Epistemology – Where does our knowledge come from and is it possible to ‘know’? What kind of statements are we trying to make? Do we want to develop universal laws or provide meaningful descriptions of how social life is enacted?

Methodology – How are we to discover and validate what we think exists? What methods will we select to collect data?

It is important to be aware of these definitions and to consider where exactly our own belief systems lie. This will enable us to develop a research question and to set about addressing it using appropriate research tools to give us the best possible fit between the question and the type of solution we offer.

Positivism and Research



Research in the natural sciences has been developed within the positivist tradition. The empiricists’ view is that scientific knowledge generated through the study of physics, chemistry and biology, is thought to be valid – derived from innumerable, systematic and

repeated observations. Theories are derived from induction where inductive logic allows a move from the specific to the general and so to universal statements. It assumes that there is a single objective ‘reality’ that can be ‘discovered’ via experimentation. When this paradigm is applied to the social sciences it involves certain assumptions that characterise the positivist paradigm.

Interpretivism and Research



A different tradition to research adopts a qualitative focus and is known as a naturalistic or ethnographic way of considering the social world and the social phenomena that exist within it. This approach can be of particular value in researching studies into the human

sciences. It is founded on the premise that the social world consists of meaningful actions.

In order to understand what is occurring and make sense of it, researchers must achieve a degree of empathy to allow them to interpret the different meanings that individuals and groups attach both to their activities and their accounts of these activities and interactions. But it is vital for the researcher to be rational and not emotional in their understandings as this allows for empirical verification of their observations and inferences and provides rigor and authenticity to the research process. This tradition holds that knowledge is relative rather than absolute.

The Differences Between Positivism and Interpretivism

Positivism	Interpretivism
<p>Ontological Assumption</p> <p>Reality is objective, ordered, and governed by natural laws that can be realised through experience.</p>	<p>Ontological Assumption</p> <p>Reality is internally experienced and socially constructed through interaction and interpretation and is based on the definition people attach to it.</p>
<p>Epistemological Assumptions</p> <p>Knowledge exists in the form of natural laws. It can be discovered and explained and it is possible to control events and predict their occurrence.</p>	<p>Epistemological Assumptions</p> <p>Knowledge is understood in the subjective meanings people attach to physical and social objects and the actions they take in relation to them in a social context.</p>
<p>Methodologies</p> <p>Experiments Randomised Control Trials Surveys Structured Interview Fixed Choice Questions</p>	<p>Methodologies</p> <p>Unstructured Interview Ethnography Observation Focus Groups Case Studies Action Research</p>

These approaches should not be regarded as oppositional, but rather as complementary, providing a whole range of research strategies and methods that allow the researcher to fully explore the particular phenomenon under study from different perspectives. They are best considered as a continuum, rather than a dichotomy, which will allow for a broader and more open approach to the whole research process.

It is true that medical research often includes qualitative studies but the design can be limited by what is acceptable within the medical community. We often find grounded theory and data saturation popular because these concepts impose structure and are therefore more understandable to absolute scientists. Medical Education research has quite a gap it needs to bridge in order to bring social science methods into the frame.

Research in Medical Education



The main difference of educational research, when compared to science-based research (such as the science-based discipline of medicine), is that it uses a broader range of research approaches than the science-based discipline. Much of the research you

will be used to from the field of health care is based on the positivist paradigm. From the positivist perspective, the ontology is **realist** (we know because things are real) and the epistemology is **objective** (because we can identify components of the physical world by objective measurement).

The discipline of education shares much of its research history with the social sciences. In addition to using positivist (quantitative) approaches to inform research design you are just as likely to see constructivist (or qualitative) approaches. Here, the ontology is **relative** (knowledge is dependent on different perspectives) and the epistemology **subjective** (there are multiple realities).

Thinking About Your Perspective



The positivists believe in principles to the extent that there is no other way of looking at the world and only a study that has an experimental methodology is of use to anyone. To test a hypothesis, data must be gathered with valid and reliable instruments from a random sample, subjected to carefully controlled

statistical manipulation in order to produce generalisable findings. In comparison, for the constructivists only the hermeneutical methodology will do. This means exploring individuals' experiences by engaging in interaction with them, interpreting the data to induce a representation of the world that they inhabit. Of course, in reality, there are few people whose belief system fits neatly into such polarised categories. Reading about the particular phenomenon will open up questions that should inform the decisions as to whether to use the positivist or constructivist research approaches, or both.

References and further reading

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* Dr Lesley Pugsley passed away on 28th June 2020. Her passion and expertise as a Social Scientist inspired us all and her legacy will forever be remembered by the Medical Education community in Cardiff University and beyond.