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HOW TO

THE CLINICAL TEACHER

How to … deconstruct the research paradigm: Supporting the non-social scientist researching in medical education

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1 | INTRODUCTION

Finding effective methods to guide novice clinical education researchers to interrogate their beliefs about paradigms can be a challenge for education practitioners leading training in this area. We share why we believe it is important for healthcare educators to build an understanding of research paradigms and how we demystified the teaching of philosophy and the '-ologies' of research to support novice researchers in their development. Through our use of gamification techniques based on Socratic questioning, we show how educators may be supported in the process of deconstructing their research project's paradigm into its component parts. This comprises key questions about coherent alignment of their ontologies, epistemologies and methods and encouraging researchers to think openly about their assumptions to improve the conduct of research, particularly in the qualitative field.

Step 1: Acknowledge the challenge of understanding research paradigms

A paradigm is a basic set of beliefs or worldview that guides research action or investigation.[1,2] Paradigms are important because they define a researcher's philosophical orientation, which ultimately directs the chosen research methodology and how meanings are constructed from the gathered data.[3]

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Explicitly acknowledging one's paradigm can be a discombobulating element of medical education research for health professionals who are new to social science methods. The constituent parts of the research paradigm and how to use it to construct a good research project involve immersion in the language of social science and philosophy. These concepts may be very familiar to some academics; however, for non-academics coming newly to research technique and philosophy, this may be an alien topic, or 'alien knowledge'.[4,5] This means there can be a lack of awareness that there may be more than one way of approaching research.

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Healthcare professionals have typically been trained in research methods underpinned by positivism to consider 'best practice' through guidelines and 'gold standards', to look for confounding factors and

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controls and to judge quality by validity, reliability and generalisability in outcomes. However, although education research can use the positivist paradigm, it also embraces a much broader range of paradigmatic practice such as interpretivism and critical theory. For these researchers, being guided by assumptions, beliefs and values of a particular paradigm can be a new and challenging concept. Indeed, the original idea for our 'paradigm games' session was created through our own experiences of finding this type of theoretical thinking challenging.

Understanding your research paradigm supports the conduct of good quality education research, which coherently align ontologies, epistemologies, and methods.[5] It also encourages the review of positionality, subjectivity and reflexivity, which helps to situate the research in its given context (time, place and society).[6] Reflection as a tool to critically review clinical practice is a familiar concept for many healthcare professionals, but translating this skill into educational research can be less familiar. It was through reflections upon our own research journeys and experience as medical educators, we were able to develop a simpler and more effective teaching method.

Step 2: Think through the problem: how to demystify the research paradigm

The challenge we faced as medical education practitioners leading training in this area was finding an effective method to guide our novice researchers to interrogate their own beliefs about paradigms. When thinking through this problem, we drew upon the principles of andragogy, which advocates creating learning opportunities that move away from simply transmitting knowledge to more autonomous ways of learning.

Our role as teachers were therefore as facilitators of learning rather than information providers.[7] We also recognised the utility of Socratic questioning as an andragogical practice in health professions education.[8] Socrates' objective was to engage others in an exercise of critical thinking, placing an individual's existing beliefs under scrutiny with the intention of leading to the individual refuting these beliefs.[9,10] This would lead to confusion, followed by curiosity, which would then lead to the search for truth through further consideration and discussion. Socratic methods of enquiry can further promote self-directed learning and critical thinking,[11,12] both of which are skills needed to formulate an education research proposal.

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Step 3: Consider an innovative approach

When considering challenging topics or conceptual theories, learners can sometimes find a topic difficult not only due to the content but also the linguistic challenges of new terminology. Techniques such as gamification can help to support learners through this type of disorientating learning through including competition, participation, creativity and fun into the experience. This improves engagement, understanding and retention allowing learners to better retain and apply their new knowledge.[13]

Techniques such as gamification can help to support learners.

In our context, we designed a game to deconstruct and simplify the complexity of the research paradigm. We took a social constructivist approach encouraging participants to draw upon what they already knew, to ask themselves questions about their assumptions and approaches to their research ideas. We planted seeds of uncertainty where participants had to find their own answers and come to their own conclusions, most importantly, their own positions in the paradigm continuum. We then drew upon Socratic teaching methods using an interactive task that encouraged participants to scrutinise their research project ideas by answering a series of questions. These were presented as a 'colour matching game'. Unbeknownst to the participants, each question was designed around the elements of the research paradigm (aim, ontology, epistemology, axiology, rhetoric, methodology, methods and sources) and a question around quality measures, for example, measures of validity, transferability, etc. The seven questions are provided in Figure 1.

We designed a game to deconstruct and simplify the complexity of the research paradigm.

With their current research project in mind, for each question, participants were asked to consider four statements and choose which best reflected their work or point of view. They then selected the relevant colour to note down. For example, the four options for question one are shown in Figure 2.

The relation of the four statements to four key paradigms (red-positivism, blue-post-positivism, green-constructionism/interpretivism and yellow-critical theory) was consistent but kept hidden from the participants at the time of questioning. As the participants were unaware of which paradigms the answer options related to, they were less likely to be swayed by their existing schemas.

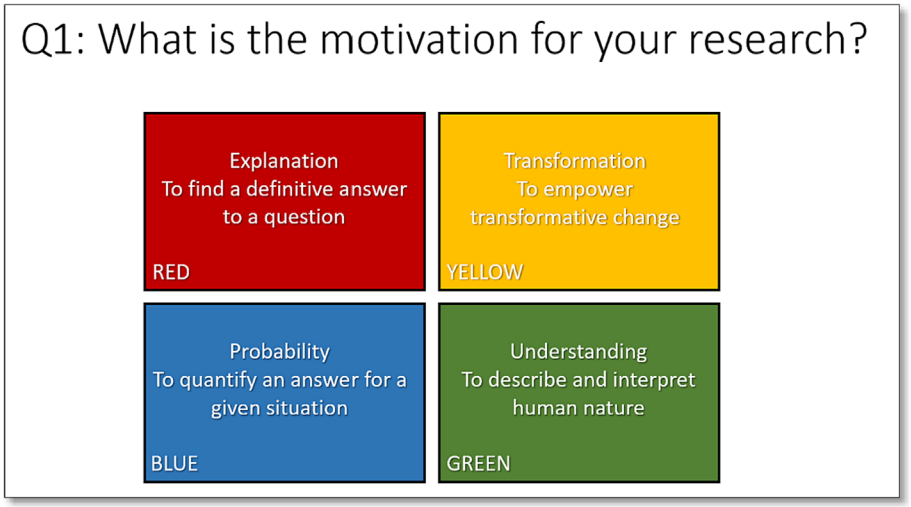
This approach was intentionally challenging, intending to place the individuals existing beliefs and implicit biases and paradigmatic

FIGURE 1 The seven questions used in the 'paradigm games' tool to help researchers deconstruct the research paradigm into its component parts (Q1 refers to aim, Q2 to ontology, Q3 to epistemology, Q4 to axiology, Q5 to rhetoric, Q6 to methodology, methods and sources and Q7 relates to quality measures).

The key seven questions were:

Q1: What is the motivation for your research?
Q2: What is the role of the values and ethics in your research?
Q3: What is your view of the nature of reality?
Q4: What is your view of the nature and process of gaining knowledge?
Q5: What is the language and voice of your research?
Q6: What methodology will your research use to find new knowledge?
Q7: How will you validate your research?

FIGURE 2 Example of question option slide from 'paradigm games' research tool.



assumptions under scrutiny. At the end of the question set, participants were then asked to review their answers to the questions, and the paradigm linked to each colour set was revealed, for example answer options 'a' (red) related to positivism and answer options 'c' (yellow) referred to critical theory.

Step 4: Define and evaluate outcomes; what will determine success?

Our intended outcomes were to demystify the teaching of philosophy and the 'ologies'. We hoped to be able to guide novice researchers to interrogate their beliefs about paradigms so that they would be able to align their ontology, epistemology and methods. Our novice researchers would be able to deconstruct their research project's paradigm into component parts if our strategy was effective.

For some participants in our game, the outcome of their answers clarified their research approach was aligned into either one or two linked paradigms, for example, answers just corresponding to positivism and post-positivism where the study was quantitative and based on a hypothesis. For others, the tool highlighted a realisation that their research design was not aligned with a particular paradigm, and this was likely to be influencing not only the planning of their methods but in some cases helped to explain why certain challenges were occurring. For example, they were attempting to gather data using narrative approaches, (aligned with interpretivism and critical theory), but posing questions that inferred they were attempting to provide or disprove a hypothesis (which aligned with positivism or post-positivism). This identified inconsistences in their project design and helped them rethink and replan their methodology to coherently align with their ontological and epistemological standpoints.

Step 5: Evaluate and refine

During the sessions, many individuals found that engaging in this type of thinking allowed them to identify a whole new side to research that they had not been able to previously explore. This excited their interest in research. Others simply could not see the benefit of this type of deconstruction. These were typically those for whom their current research aligned with positivist principles, thus considering a very objective data driven view that allowed clear, consistent and prompt alignment with the task.

Another challenge we came across was that some individuals considered this exercise through their own personal philosophies. They perceived *themselves* as falling under a paradigm, rather than a philosophical approach for a particular project. This often led to a mixed picture, or confusion that their viewpoint and that of their project were misaligned. Reassurance could then be given that we can all undertake all types of research, even if we have a philosophical preference for a particular paradigm or method, and that part of the process of ensuring robust research practice is to consider paradigmatic

alignment for each project and perhaps even for each research question.

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2 | CONCLUSION

Learning new skills relating to philosophy and the '-ologies' of the research paradigm can be challenging for healthcare professionals as they venture into education research. Our approach allowed us to tackle this challenging topic so often either overlooked by novice researchers or feared due to being outside of the individual's comfort zone. It allowed us as healthcare educators to reflect on how we support others to embrace thinking about their paradigmatic approach to better align their research and ground it in practice but also to aid them in their thinking about positionality and the influences on their practice. We believe the tool and its approach can be transferrable to novice researchers across other disciplines, as well as providing a framework for other healthcare educators teaching philosophy of research practice.

AUTHOR CONTRIBUTIONS

We confirm that this manuscript is original, has not been published before and is not currently being considered for publication elsewhere. Sarah Allsop was responsible for the development of the paradigm deconstruction tool discussed in this paper through work for her doctoral studies. In discussion, Sarah Mclaughlin then crafted the first draft of the manuscript with the theoretical framing, and both worked collaboratively to substantially edit and critically revise the paper. Both authors have approved the final submitted version and agree to be accountable for all aspects of the work.

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CONFLICT OF INTEREST STATEMENT

The authors have no conflicts of interest to declare.

DATA AVAILABILITY STATEMENT

Data sharing not applicable to this article as no datasets were generated or analysed during the current study.

ETHICS STATEMENT

Ethical approval was not required, as it is based upon the literature and no human subjects were involved.

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